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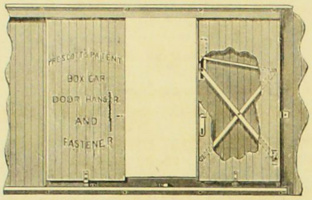

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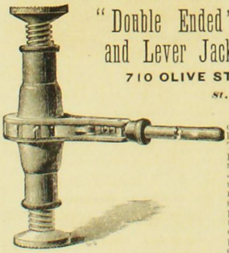

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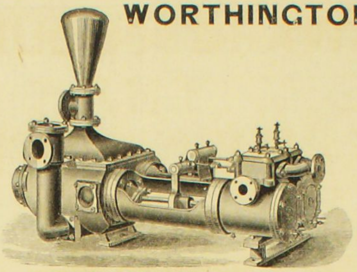

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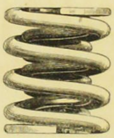

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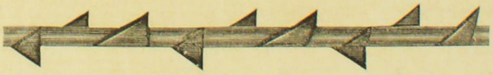

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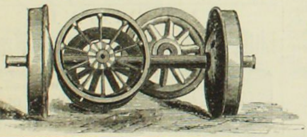

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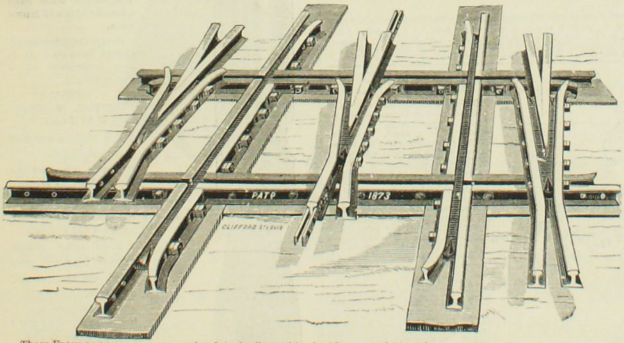

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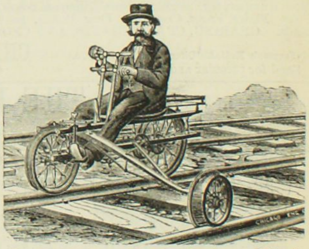

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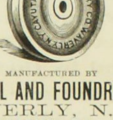
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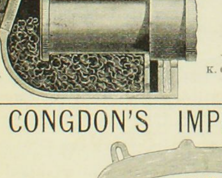

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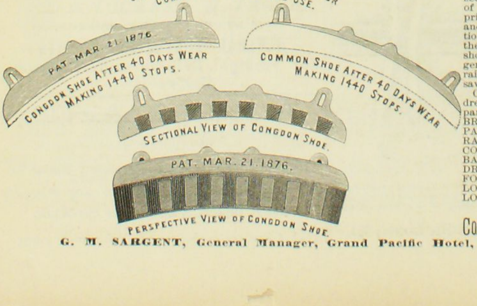
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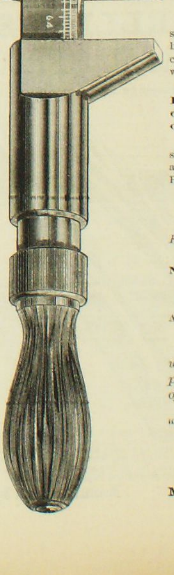

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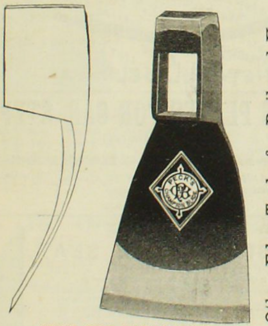

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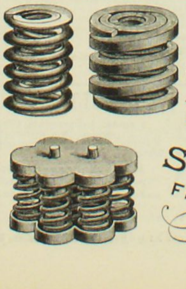

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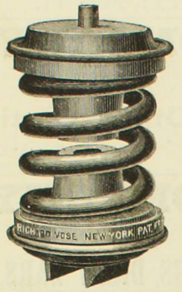
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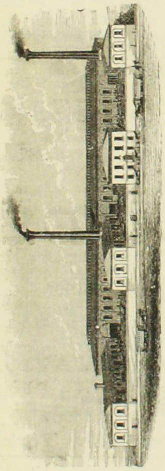

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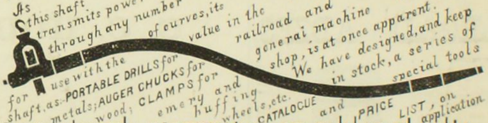

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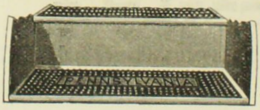

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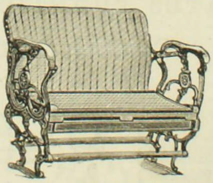

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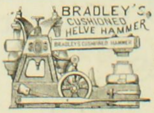

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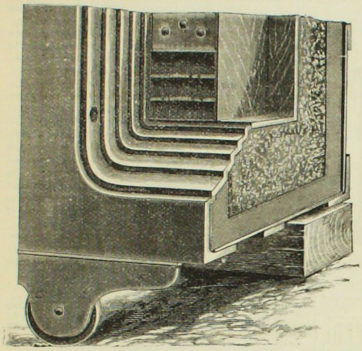

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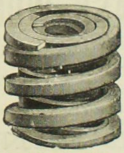

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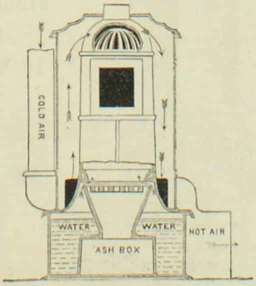

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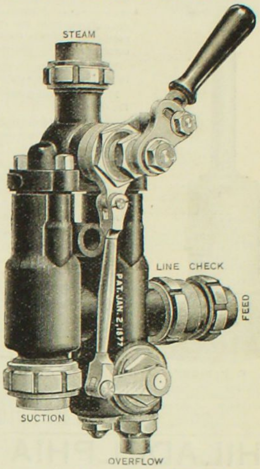

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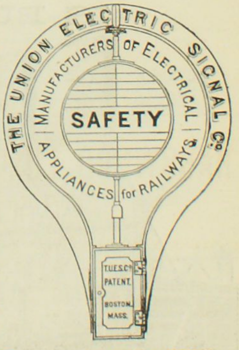
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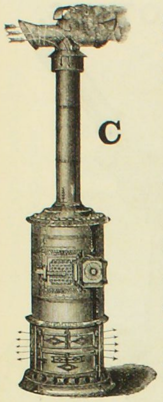

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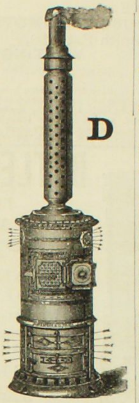

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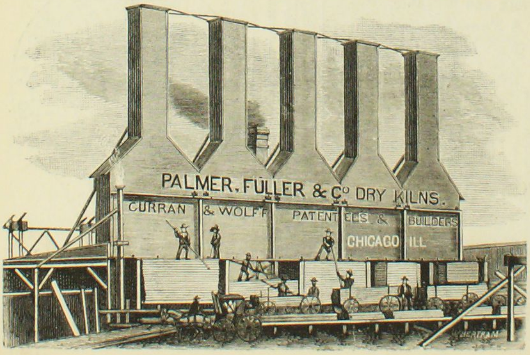
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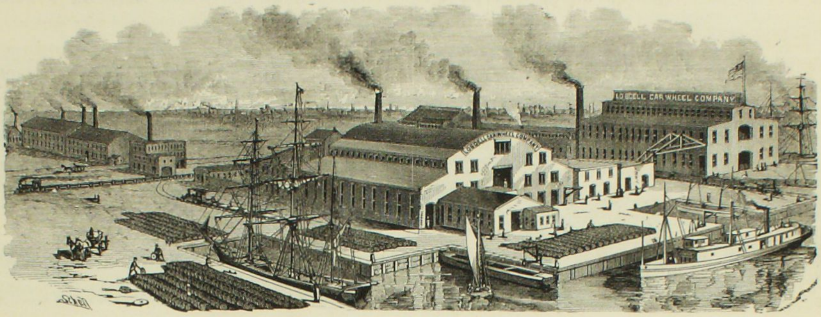
WILMINGTON, DELAWARE.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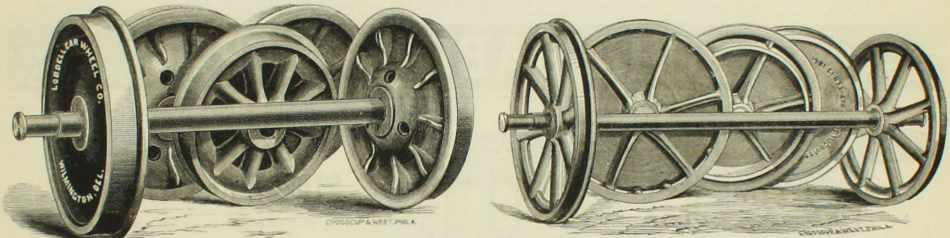
LOBDELL CAR WHEEL COMPANY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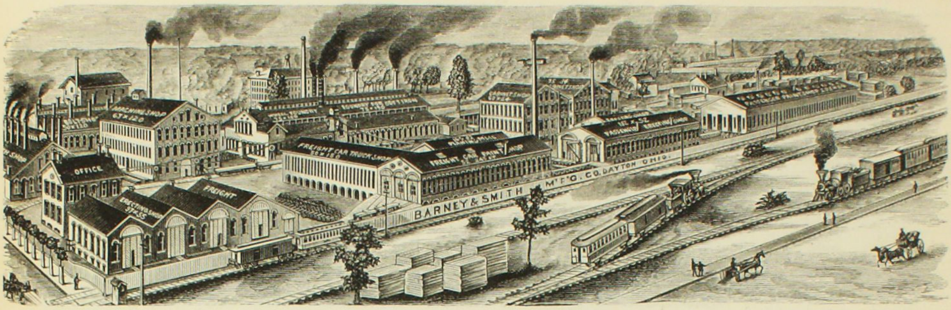
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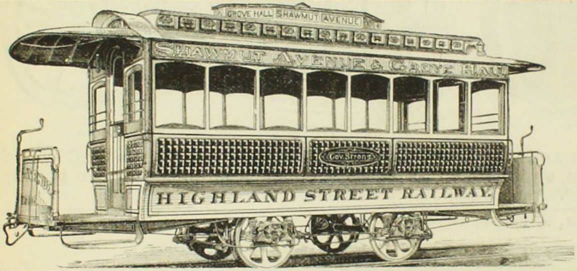
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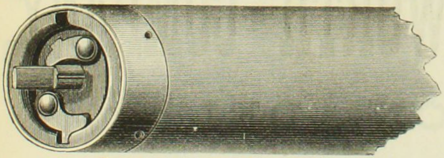
ALL LATE and VALUABLE IMPROVEMENTS,

Are noted for Light Running and Easy Riding, Combining Lightness and Strength with Beauty in Design and Finish. Our Large Facilities enable us to Fill Orders Quickly, and at the Lowest Prices for Superior Quality.

HARTSHORN'S SELF-ACTING SHADE ROLLERS.

This cut shows the Roller end with the pawls attached, as it appears when not in motion.



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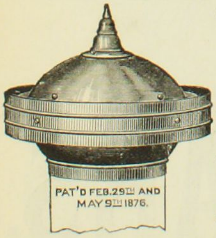
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FOR
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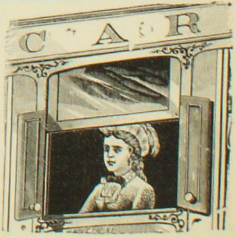

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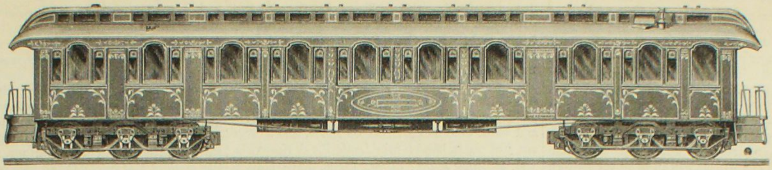
THE NATIONAL CAR-BUILDER.

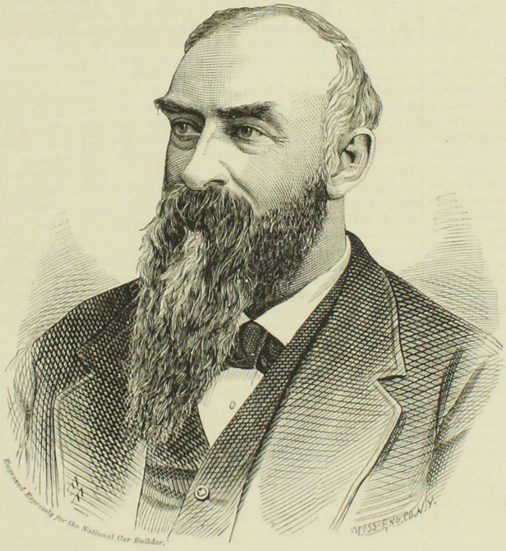


DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XI.
NUMBER 12.

DECEMBER, 1880.

SINGLE NUMBERS, TEN CENTS
$1.00 PER ANNUM.


Engraved Expressly for the National Car Builder.
MOSS-ENG.CO.N.Y.

E. R. Brown

Late Master Car-Builder of the Lehigh Valley Railroad.

Miscellaneous Items.

Col. E. A. L. Roberts, of Titusville, has made a contract with the Baldwin Locomotive Works to build a passenger engine which he expects will be able to run 80 miles an hour, and maintain this rate of speed for 100 miles without stopping. The locomotive is to weigh 38 tons. The driving wheels will be 6 feet in diameter. The forward trucks and those on the tender will be made of paper, which, it is said, will endure more strain and wear than iron or steel. The wheels will all be of the pattern known as the broad-tread, which will enable the engine to run on roads of either 4 feet 8½ inches or 4 feet 10 inches gauge. The most important feature of the locomotive will be the introduction of the Roberts patent cylinder and piston, the exhaust ports being in a continuous circle around the cylinder. The tender will be so constructed as to carry a foot of water under the coal, as well as the usual amount on the sides. There will be a water chamber on the locomotive so arranged that compressed air from the air pump can be admitted in the top of the chamber upon the water, by which means a stream may be forced upon any hot bearing connected with the engine or tender. This is expected to overcome the trouble of hot boxes. The nozzles through which the steam is to pass and create a draft will be 8 inches in diameter, and the boiler will be the largest that can be put upon standard gauge trucks.

The Denver & Rio Grande Railway is one of the greatest triumphs of human skill and perseverance. It has been built under disadvantages and in spite of obstacles that would have caused the stoutest courage to fail, and it is now one of the successful enterprises of the country. The main line extends southward from Denver, 120 miles, to South Pueblo, and from there northwestwardly, up the Arkansas river, 160 miles further, to Leadville, or a distance in all of 280 miles. From South Pueblo another line extends southwestwardly, a distance of 130 miles, to Alamosa and is being fast extended northwestwardly from that town up the valley of the Rio Grande. From Cucharas, a point about 50 miles south of South Pueblo, a branch extends southeast to El Mora, a distance of 37 miles, where it meets the Atchison, Topeka & Santa Fe road. It reaches all the richest towns of South Colorado and is by far the most important railroad of the state and the most extensive narrow-gauge road in the world. The line already built for nearly 50 miles west of Alamosa will soon be completed to Silverton and thence westwardly, ultimately reaching the Pacific coast.

Master Mechanic Leeds, of the Indianapolis, Decatur & Springfield road, is building several cabooses on a plan which should be adopted by every road in the country. There are eight berths in them, a dining-room, water-closet, and all the conveniences to be found on Pullman coaches. The cabooses are 35 feet long, and rest on two 4-wheeled trucks. On each car is a roomy tower for observation in which a train man can sit, and, without descending from it, put the brakes upon both trucks. While they are as comfortable in every respect as a Pullman coach, they are plainly furnished and cost but little more than an ordinary caboose. Freight trains are subject to so much delay in waiting on side tracks, that it is really a merciful act on the part of the company to furnish so comfortable quarters. The berths are roomy and so constructed that they shut up on the side of a car as does the upper berth of a Pullman.

The Missouri Car & Foundry Co. is very busy in its car department. A car has just been completed for the Texas Express Co., and is intended to be used as a frontier office, etc. It is 50 feet long inside, and has three compartments, one 10 feet long as a kitchen, one 20 feet long as a general express storeroom, and one 20 feet long to be used as an office and sleeping-room. There are four folding berths that fold into the car side so as to be entirely out of sight. Iron bars over windows and doors protect the inmates and contents against burglars. There is a large door on each side about the middle of the car. The outside is painted an orange color. In addition to this, contracts have just been completed for the St. Louis, Iron Mountain & Southern and Gulf, Colorado & Santa Fe roads, and a large one just put in hand for the Louisville & Nashville.

M. M. Buck & Co., of St. Louis, have built a novel hand car for a Texas railroad. It will carry 20 men with their equipment of tools, and is operated by two sets of mechanism, located one at each end, and connected by two parallel longitudinal bars, motion being imparted by the men through them to the machinery. To operate, the bars are lifted up into position, by which motion the machinery becomes engaged and the car propelled. When the bars are released they fall back and the machinery becomes disengaged from the wheels, so that in going down grade the bars are at rest, the speed of the car being checked when desired by an ordinary brake. Upon trial with the power of 20 men a speed of 30 miles an hour was easily attained.

A decision has been rendered by Judge McKennon, of the U. S. Circuit Court, in reference to the exclusive right claimed by the Pennsylvania Railroad Co. to operate the line of the Junction Railroad Co. The court decrees that the Junction Co. must furnish motive power or transport over its road freight or passengers arriving in cars of the Philadelphia, Wilmington & Baltimore Railroad destined for the Philadelphia & Reading Railroad or its connections. It must also transport freight or passengers arriving in cars by the Philadelphia & Reading Railroad, destined for the Philadelphia, Wilmington & Baltimore Railroad or its connections.

Illinois has now nearly 7,600 miles of railroad. The first rail was laid at Meredosia, Morgan County, May 9, 1838, on the first division of what was called the Northern Cross Railroad. The first locomotive used on the road arrived at Meredosia, September 6th, of the same year, and was put on the track on the 8th of November following. It was built by Grosvenor, Ketchum & Co., at Paterson, New Jersey. The civil engineer under whose supervision the road was built was George P. Plant, late president of the Union Merchants' Exchange, St. Louis.

The E. D. Albro Company, of Cincinnati, dealers in native and foreign cabinet woods, exhibit a fine display of these products at the exposition in that city, including walnut burls, mahogany, Florida cedar, amaranth, sorrento, logs of rosewood, olive-wood, boxwood and tulip, ebony from Ceylon, olive veneer, etc. The arrangement is such as to show to the best advantage the resources of the company in supplying the trade with every rare and desirable wood from all parts of the world.

The Jackson & Sharp Company of Wilmington, Del., have recently built for the Wagner Sleeping Car Company, two elegant sleeping cars to run between New York and Chicago. They are named the Cohassett and Chautauqua. The inside finish is of mahogany and marqueterie, and is very elegant in design. The upholstering is of the finest crimson plush, the carpets of velvet, and the curtains of raw silk. The length of the car body is 66 feet.

The Harlan & Hollingsworth Company, Wilmington, Del., is building six sleeping and twenty passenger cars, for the Chicago, Milwaukee & St. Paul; five sleeping coaches for the Baltimore & Ohio; passenger coaches for the Atchison, Topeka & Santa Fe, the Mobile & Ohio, and the George's Creek & Cumberland roads. They have also a large quantity of work on hand for foreign countries, including passenger and freight cars for Brazil, and passenger cars for Spain, Mexico, and the West Indies.

The New Haven & Northampton road is building at its shops in New Haven a palace car with a new device for keeping out dust and cinders. It consists of an extra outer window, shaped somewhat like a curved bay window, in which the glass is only half the width of the window and slides up and down. When pushed to the front side, it presents a curved surface, against which the cinders and smoke strike and are thrown outward, while the air can enter from the open half.

The Eastern and Maine Central railways are to put on a through Pullman car, which will be lighted by gas and heated by steam. The gas will be made in the baggage car on the train and connected with the car in the same manner as the vacuum brake. The steam will come from the boiler of the locomotive, and under each seat there is to be a coil of pipe heated by steam. The invention is that of Mr. Payson Tucker, Superintendent of the Maine Central.

The Supreme Court of Pennsylvania, in a suit brought by a minor against the Panhandle Railroad Co., to recover damages for injuries while playing on the track, decides that at all places except at crossings, where the public has a right of way, a man who steps his foot upon a railroad track, does so at his peril. The company has not only the right of way, but it is exclusive at all times and for all purposes.

The Chicago, Burlington & Quincy has recently added three new Pullman sleepers, of the latest and handsomest pattern, to their Kansas City line. They are called the Bremen, Britannic, and Berlin. They are handsomely finished inside with bay wood. The upholstering is of the newest and latest designs, carpets of Japanese patterns, etc. An innovation in the usual interior arrangements is the adding of a state-room containing regular double beds of the cabinet pattern.

Capt. N. M. Wheeler, Superintendent of the dining and sleeping cars of the Chicago, Rock Island & Pacific Railroad, has been offered, and it is stated has accepted, the position of Superintendent of Construction and Repairs of the Wagner Sleeping Car Company. The company has obtained control of the old New York Central shops at Niagara Falls, where the company's cars running on western lines will be repaired.

The Central R. R. of New Jersey has put Baker heaters in six of their day coaches that have heretofore had two coal stoves, one at each end. The heater is inclosed in a little room at one end, and the pipes pass around the car with a loop under each seat, thus radiating the heat where passengers need it most—at their feet. Aside from getting the two coal stoves out of sight, the space occupied by one of them is gained for an additional seat.

The Wabash, St. Louis & Pacific Railroad recently purchased ten passenger coaches at a cost of $100,000, which are regarded as marvels of beauty. They were built by the Barney & Smith Company, of Dayton, and the Pullman Car Company, Detroit, and are running on the through trains between Toledo, Chicago, St. Louis and Omaha.

The Blaine Brothers Car Works, at Huntingdon, Pa., employ 150 men on repairing work for the Pennsylvania Railroad. They also have an order for 600 box and flat cars for the New Orleans & Pacific Company, and already have both their wheel and gray-iron foundries under roof, and will more than double their force as fast as the works can be got ready.

A Superintendent of Tree Culture has been appointed for the St. Paul, Minneapolis & Manitoba Railroad, and it is reported that he has contracted for 300,000 trees. Most of the roads west of the Mississippi and Missouri rivers have also commenced to raise trees in order to secure their supplies of ties and timber.

Geo. Buntin & Co., of Philadelphia, have devised a new and beautiful car seat frame in the Eastlake style, and are filling orders from the Boston & Albany, N. Y. Central, Balt. & Ohio, and a number of car manufacturers.

The Boston *Advertiser* says that it will no doubt surprise those who think the roads must lose largely on their passenger business in consequence of the war of rates, to learn that the passenger earnings of the Chicago & Alton for the first week in November, when rates were lowest, show an increase over earnings for the corresponding week last year of $48,170.

The Peninsular Car Co., of Detroit, have purchased the works of the Adrian (Mich.) Car Co., and will run them as a branch of the Detroit concern, commencing on the first of December.

The Toledo shops of the Wabash, St. Louis & Pacific are crowded with work. Since last spring 600 faeight cars have been turned out, and now an order for 200 more is being filled.

Mr. William Fuller, of Meadville, Pa., the General Master Mechanic of the New York, Pennsvlvania & Ohio Railway, recently met with a serious accident at Galion, O., by falling into an excavation under a sidewalk carelessly left unprotected. Mr. Fuller had his fore arm broken in two places and was otherwise injured.

John Donohue, a locomotive engineer for forty-six years, died at his home in Susquehanna, N. Y., recently, at the age of ninety-eight years.

The new palace cars recently built for the Baltimore & Ohio R. R. Co., by the Barney & Smith Manufacturing Co., are furnished with embossed Spanish leather decorated in harmony with the wood-work. The leather is from the house of Chas. R. Yondell & Co., of New York.

According to a Chicago paper, there is a great lack of transportation facilities at the West, owing to the scarcity of cars and a universal and unprecedentedly large demand for them. It is also said that many receivers and shippers, who are clamoring for cars, aggravate the trouble by not loading and unloading promptly.

Mr. John Swift, formerly of the Dickson Manufacturing Company, Scranton, Pa., but for some years past Superintendent of the Schenectady Locomotive Works, died in Schenectady, N. Y., Oct. 31. He had been sick several days, but his death was unexpected. Mr. Swift was well known as an able and energetic manager.

Mr. Wm. D. Rowley, who for the last eight years has been the Master Mechanic of the Kansas City, St. Jo. & Council Bluffs road, at St. Joseph, Mo., has accepted the position of Master Mechanic of the Chicago Division of the C., B. & Q. road, with headquarters at Aurora, Ill. His long experience and tried capacity eminently qualify him for his new duties.

The Boston & Albany road is building at its Allston shops three new sleeping cars 60 feet long in the body, and also six passenger coaches 55 feet long. The sleepers will be finished entirely in mahogany, with no gilding, mouldings or scroll work.

The New York Central & Hudson River road has ordered 250 flat cars 34 feet long, 250 twenty-ton gondola cars and 500 grain line cars.

The Jackson & Sharp Co., Wilmington, Del., is building a number of passenger cars for the Chicago, Milwaukee & St. Paul road.

The Iron Mountain have just put on an entire new equipment of emigrant coaches, part of which were built by the Dayton Car Works, and part by Gilbert & Bush, of Troy, N. Y.

It is said that the Pullman Palace Car Company is building eight of the finest coaches ever built in America, for use on the New York, Lake Erie & Western.

The Denver & Rio Grande road has concluded a contract with the Baldwin Locomotive Works for 32 locomotives, to meet the growing demand for transportation, and also to stock the extensions. This order makes 124 locomotives that have been bought for this road since the first of last November, 92 of which have been delivered.

Twelve new passenger coaches, the most elegant that can be built, have been ordered by the Indianapolis & St. Louis, and are to be delivered early next spring.

The Barney & Smith Company, at Dayton, are making extensive improvements in their car works, among which is a new paint-room 150×66 feet, three stories high.

◆

The *Locomotive* publishes engravings in each issue showing how boilers look just after they have exploded. This doesn't seem to hit the case at all. What is needed is a picture showing how a boiler looks just before it is going to explode. We could then learn when to get out of the way.—*New Haven Register*.

Thousands of such pictures have been published, and yet people don't get out of the way worth a cent.

◆

The *Boston Journal of Commerce*, in an article on "The Discomforts of Railroad Traveling," says that no railroad company has yet introduced a means for making the roof of the car impermeable to the sun's rays, and so, although everything in the interior of the car is pleasant and agreeable, there is a suffocating heat coming through the roof which is exceedingly depressing whenever the sun shines with any power, as it does in this latitude from April to November, and even sometimes during the winter months. It seems as though it would cost but little more in the construction of passenger cars on the railroad to introduce a light, cheap, possibly temporary roofing inside the permanent roofing of the car, allowing some of the air that now so freely flows in through our "Monitor" ventilators to find its way between the false and true roof of the car. It certainly is a fact that while persons in the open air in full exercise are cool enough, those in a car traveling at the rate of twenty-five miles an hour, find the interior of their apartment uncomfortable. The only reason for the difference is that the sun's heat on the top of the car, made of material and painted in colors which reflect the sun's rays, warms the interior of a car very much as the interior of an oven.

There is one more fault in our railroad traveling, which some time will be remedied, which should ere this have been remedied, and that is, that no open window can be left five minutes without depositing upon the adjacent passenger a coating of particles of carbon, which annoy the skin, disfigure the clothes, and are a trouble in every sense. These come from the locomotive, which is assumed to burn its fuel; it *burns* its fuel, but does not *consume* it. A large portion flies along on either side of the train, as the direction of the wind and the velocity of the train may determine, and if an open window invites ingress, it lodges on the person or clothes of the passenger, injuring both and also the property of the company.

◆

The Wason Car Company, at Brightwood, are very busy, turning out at least four passenger and 20 freight cars every week, and expect to be still busier during the winter. They are making a large number of passenger and reclining chair cars for the Kansas City, Fort Scott & Gulf Railroad, and some very handsome, expensive cars for the New Haven & Northampton Road, and for two Texas roads. They have just sent off three passenger cars for the Wisconsin & Minnesota road, which they consider in most respects the handsomest their works have yet produced. The cars are 48 feet long, and are remarkable for durability, convenience and beauty of finish. The outside is a canary color, elegantly ornamented with other striking colors and gold in odd and graceful designs, and the inside finished with solid mahogany and marquetry work, has a general appearance of elaborateness and taste as unusual as it is pleasing. The feature of the inside ornamentation is square work with horizontal and vertical grooves, making it durable and easy to keep clean. The ceiling is lined with veneered oak, decorated in the style so popular nowadays, the designs and work being considered some of Captain Pierce's best. The cars are lighted by three double, nickel-plated hurricane lamps with porcelain shades, and it is claimed that the light is so strong that the finest print can easily be read in any part of the car. The hatracks are of a new Eastlake pattern, each car has a saloon with water tank and alcove faucet, the windows are higher and wider than the usual size and supplied with light-colored poplar blinds, the trimmings are of solid bronze, the seats richly upholstered in crimson and green, and the workmanship in all the details of construction and finish is of a superior order. Each car has the Miller platform and buffer and Westinghouse brake.—*Springfield Republican*.

◆

Ezra R. Brown.

On our first page will be found a likeness of the late E. R. Brown, who died of paralysis of the brain, at Mauch Chunk, Pa., November 1, aged 53. His long connection with the Lehigh Valley Railroad in the capacity of Master Car-Builder at the Packerton shops of the company, has made his name familiar to a large circle of railroad men, as well as to many others who met him in a social and business way, or who knew him only from his well-established repute as a capable and experienced railroad mechanic. He was born in Plattsburg, N. J., and in his earlier years learned the trade of coach-making. After a residence of about two years in Virginia, he entered the service of the Camden & Amboy Co., at Camden, N. J., where he perfected his knowledge as a practical car-builder. He then spent a short time in farming, after which he was called to the management of the car shops of the Lehigh Valley road at the old Mauch Chunk shops, which at that time (1858) employed only four hands. This force, however, soon increased to 80 men, when Mr. Brown was made superintendent of the shops, which at this time were removed to Packerton, about one and a half miles below Mauch Chunk. Since then, as many as 1,100 men were at one time employed at the works. No more thoroughly efficient officer was ever in the service of the company. He not only possessed a high order of executive ability, but had a rare mechanical skill which enabled him to originate many valuable inventions for simplifying and economizing the operations of his department. As to his fidelity to the interests of his employers under all circumstances and at all times, there was never a shade of suspicion, his sterling qualities as an upright and useful citizen being universally recognized.

Mr. Brown leaves a wife and three children. He was a member of the Baptist church and of the Masonic fraternity. His funeral was largely attended. The remains were taken to Bordentown, N. J., for interment, and were buried with Masonic honors.

◆

Height of impudence: Taking refuge from a storm in an umbrella shop.

"If all the world were blind," said an Irish clergyman, "what a melancholy sight it would be!"

Wilson, Walker & Co., Pittsburg, Pa.

[*From the Railroad Gazette.*]

This enterprising firm, as most of our readers know, is engaged in the manufacture of a great variety of rolled and forged iron work for railroads. Their production includes merchant bar and plate iron and a great variety of forged iron for various purposes, such as draw-bars and hooks, follower-plates, buffers, equalizing-bars, centre-plates, truck frames, swing-hammers, coupling-pins and links, axles, locomotive frames, etc.

For the manufacture of some of these they use special machinery designed for the purpose, and have employed every means to facilitate the production of this kind of work. Their establishment covers from four to five acres, and is divided into two distinct departments; one the iron mill, where the rolled iron is manufactured, and the other the forge, in which the different articles enumerated are made. In the mill about 300 men are employed and in the forge about 200.

Doubtless among railroad men there are many who, like the writer, have a very imperfect knowledge of the process of conversion of pig-iron into rolled bars and plates. To such, a short description of the process may be of interest.

In the establishment of Wilson, Walker & Co., as in all other rolling mills, the pig-iron is melted in what is called a puddling furnace. When melted in this furnace, a process very similar to ordinary boiling takes place. While this is going on the iron is stirred with an iron bar, or puddled, as it is called. After a short time the melted iron, instead of being perfectly fluid, assumes a sticky, adhesive character, somewhat like snow when it begins to melt. When this occurs the workman is able to form it into a huge ball in the furnace. This ball is incipient wrought-iron, as distinguished from cast-iron, but mixed with a great deal of impurity, such as slag, cinder, etc. The iron is a spongy mass, in which the impurities may be said to be absorbed, as water is in a sponge. In this condition the metal is called a puddled ball. The next process is to pass it through a rotary squeezer. This is a machine consisting of a vertical revolving cylinder, serrated or fluted on its outside surface. This cylinder is contained in an external case which is eccentric to the cylinder. Consequently the opening on one side is considerably wider than on the other. The ball is inserted in the wide opening, and is made to revolve by the motion of the cylinder, and in this way is forced into the opening between the cylinder and its case. As this opening is widest at its mouth and is contracted toward the other end, the ball is not only revolved but is squeezed into a space which grows narrower as it advances. In this way most of the impurities are squeezed out, leaving it a comparatively pure mass of iron. It is then run between two horizontal rolls, and is thus formed into a mass approximating to a rectangular form, and is then called a "muck bar." This bar is then cut up into suitable lengths and re-piled, that is, the pieces are made into a pile of suitable size and put into a heating furnace and reheated, and are then rolled into bar or plate iron. This product is refined iron. Double-refined iron is cut up again after this process and re-rolled.

In Messrs. Wilson, Walker & Co.'s establishment there are twenty puddling furnaces, besides reheating furnaces, a set of muck rolls for making muck bar, a set of guide rolls for making round iron up to $1\frac{1}{4}$ in. diameter, a set of bar rolls for round iron up to 5 in. diameter, a set of plate rolls for plates 24 in. wide up to $1\frac{1}{4}$ in. thick, and a small universal mill for rolling flat bars from 1 in. up to 6 in. In this mill the raw material is made which is supplied to the forge and then converted into the shape required for use on railroads.

Most railroad men have an idea of the consumption of coupling pins and links on railroads. It is said by the manufacturers of ordinary pins, used chiefly by the other sex for fastening their dresses and articles of personal adornment, that the consumption averages one per day for each man, woman and child in the country. Possibly statistics might reveal some similar approximate law for the consumption of coupling links and pins on railroads. Be that as it may, the consumption is undoubtedly very large, and to supply the demand for these articles Messrs. Wilson, Walker & Co. have constructed special tools and machinery for manufacturing them, and are now producing them in enormous quantities.

COUPLING LINKS AND PINS.

For making links, they have a machine which takes the iron direct from the rolls, cuts it into suitable lengths, bends it into the form of a link and bevels or "scarfs" the ends so as to prepare them for welding. A description of the machine without an engraving would be quite unintelligible and useless. It will, however, cut and bend about 15 tons of iron in 12 hours. As a coupling link weighs from 6 to 8 lbs. this quantity of iron would make about 5,000 links in the time named. After leaving the machine, the ends of the bar forming the link are welded under a 300-lb. steam hammer. This has two dies—one attached to the hammer-head and the other to the anvil—which are of the form of the end of the link. When the latter is heated, it is laid in the die on the anvil, and a few blows of the hammer are sufficient to complete it, the whole time required being only about one-quarter of a minute for each link.

In the manufacture of coupling-pins, special tools and machines are also provided. In making these the bar iron is cut of such a length that it will make two pins. These bars are then heated in a special furnace for the purpose, and the two heads are forged in the bar, one at each end, under a 1,000-lb. steam hammer, which also has suitable dies in the hammer-head and in the anvil for forming the head. After this is done, the links are pointed in the centre of the bar, which is also done with dies. This process cuts the latter nearly in two, so that a slight blow separates and completes them both. The time required to make two pins in this way, taken with a watch, was $2\frac{1}{2}$ minutes. The product of this process of manufacture is much better finished and more uniform in appearance than it is possible to produce by hand.

ARCH-BARS AND SWING-HANGERS.

Another very effective labor-saving machine is one for bending what are called arch-bars for iron truck frames. Ordinarily, these are bent on a cast-iron "former" by hand. In the machine referred to, there are two such formers which are counterparts of each other. One of these is stationary, and the other is moved by suitable mechanism. The heated bar is placed between the two, and in a shorter time than is required to write this description, the movable former presses the bar into the shape required.

This machine will bend 18 tons of iron in 12 hours. After the bars are bent they are drilled on a multiple drilling machine, which insures the accuracy of the work and makes it perfectly interchangeable.

The heads of swing-hammers are forged in dies in very much the same way as the coupling-links are made. A flat bar of sufficiently large section to make the head is cut of the proper length, and a head is formed on each end, and the bar is then drawn down between the two to its proper size.

In the manufacture of the various complicated forms of wrought-iron draw-bars this firm has shown much ingenuity. It would be impossible though, without engravings of the different "shapes" into which the iron is formed in the process of manufacture, to give a clear idea of the way in which it is done. By examining some of these draw-bars, or even the illustrations in their catalogue, most mechanics will be puzzled to know how they are forged, and a great deal of skill has been shown in devising means of doing this kind of work. Some of their processes Messrs. Wilson, Walker & Co., not unnaturally, prefer should not be made public.

In their forge they have one 4-ton steam hammer to make billets, ten other steam hammers of various sizes, and two helve hammers for making axles and other similar work. There are five heating furnaces for steam hammer work, and 28 fires for hand work.

M. C. B. STANDARD AXLE.

It was gratifying to learn from this firm that the demand for the master car-builders' standard axle is rapidly increasing, a fact which was afterwards confirmed by interviews with other railroad men farther west. Probably a *majority* of the western railroads have now adopted this axle for all new cars they are building or have ordered, and intercourse with car and axle manufacturers has confirmed this. One western car manufacturer said that now they rarely had orders for cars with any other axles. The long struggle for their general introduction is therefore likely to accomplish its purpose, and if the journal-bearing and journal-box are only reduced to some reliable standard, uniformity of these parts is quite certain to be attained, if not universally, at least to a very great extent.

One of the events predicted has already resulted. It was said years ago that if only a standard axle were generally introduced, it would become a staple article of merchandise which manufacturers would produce in dull times and keep on hand with a certainty that there would be a demand for them. In this way the prices would be reduced, because manufacturers would then run their establishments on them in dull times, whereas, if there were no standard, they could not feel sure of selling any special form of axle unless it was ordered. Messrs. Wilson, Walker & Co. say that they now keep a supply of standard axles on hand, and can nearly always fill an order for a few hundred as soon as the order is received.

They are now making two qualities of axles, the one made from scrap iron carefully bloomed, and the other from a fine quality of double-rolled fibrous bar iron. For the heavy cars now coming into such general use it would seem to be true economy to use the best quality.

Besides the safety which results therefrom, it has also been shown that the friction of a journal is effected by the quality of the metal of which it is made as well as by that of the bearing, and that the heating of both is often due to poor iron as well as to bad brass.

The general tendency in the mechanical engineering of railroads is to supersede cast-iron with wrought iron, and in this country the forging of complicated forms has not been carried nearly so far as it has in Europe. Probably the firm which has done most to introduce forgings in place of castings on our railroads is the one whose works have been described.

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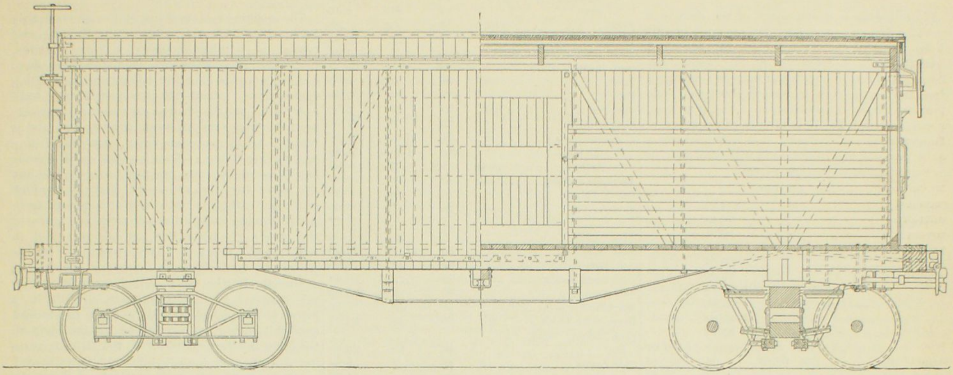
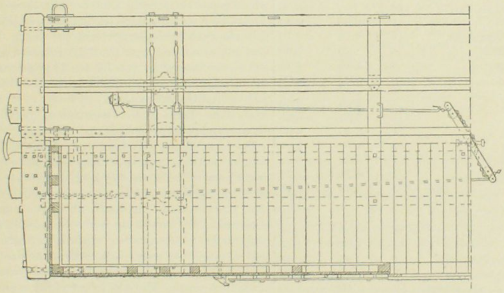
AN exchange says: Within the last few weeks car-works have been put in operation at three different points in the United States, making 19 manufactories in all where freight cars are now built, and in a few days works will be resumed at the old car-works in Adrian, Mich., making 20 in all. The smallest of these works will turn out at least six cars per day, while several will build from 14 to 20 per day, so that it is safe to state that these establishments are building 220 new cars daily, and in the railroad shops of the country at least 100 more are built daily, yet with this seemingly great increase, reaching thousands monthly, there is a general scarcity of cars all over the country.

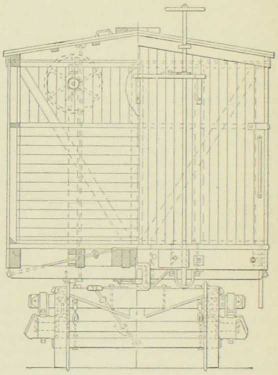
STANDARD FREIGHT BOX CAR OF THE PENNSYLVANIA RAILROAD.



Side Elevation and Section.



Half Plan.



End Elevation and Section.

GENERAL DIMENSIONS.

Total length of frame	29 ft.	10¾ in.
Total length of body	28	0
Total width of body	8	7¾
Length of running board	28	4½
Width of running board	—	18
Width of door opening	5	4
Width of door	5	6

BODY TIMBERS.

Side sills	4½x 8½ in.	x 28 ft.	10 in.	S. yel. pine.
End sills	8½x 9¼	x 8	10	Wh. oak.
Center stringers	4¼x 8	x 28	10	S. yel. pine.
Intermediate stringers	4¼x 8	x 28	10	"
Cross bearers	4¾x 7½	x 8	8	"
Bolsters	5½x14½	x 8	8	Wh. oak.
Draft timbers	3¼x 7	x 4	4	"
Block for center lever	4¼x 7¾	x 1	1	"
Blocks over center Plate	7¼x 6¾	x 1	3	"
Blocks for saddles	4¼x 7¼	x 1	3	"
Pieces for foot of end posts	2¾x 3¼	x 8	2	S. yel. pine.
Corner posts	3¾x 4¾	x 6	5	"
Door posts	3¾x 4¾	x 6	5	"
Intermediate side posts	3¾x 2¾	x 6	5	"
Intermediate end posts	2¾x 3¾	x 6	3	"
Center end posts	2¾x 4¾	x 6	3	"
Side braces	3¾x 2¾	7	0	"
End braces	2¾x 3¾	x 7	2	S. yel. pine.
Side plates	3¾x 5½	x 28	3	"
End plates	2¾x13½	x 8	8	"
Carlins	2¾x11	x 8	8	"
Center purlin	2¼x 4¼	x 28	3	"
Intermediate purlin	2 x 3¼	x 28	3	"
Door strip (stops)	2 x 3¼	x 6	6	"
Step for end brake	1½x 8¼	x 2	6	Wh. pine.
Side fascia boards	1 x 4	x 28	6	"
End fascia boards	1 x 4	x 4	9	"
Running board	1½x 6¼	x 28	6	"
Running board (2)	2½x 6¼	x 28	6	"
Guide rails (top)	2¾x 3½	x 11	5	S. yel. pine.
Guide rails (bottom blocks)	1 x 2	x 10	0	"
Cappings for sides	1¾x 3¾	x 11	1	"
Cappings for ends	1¾x 3¾	x 8	8	"
Siding	1 x 4½	x 7	2	Wh. pine.
Platform planks	2 x11¼	x 9	0	S. yel. pine.
Door stiles	1 x 6¼	x 4	4	Wh. pine.
Top rails for doors	1 x12	x 5	8	"
Bottom for doors	1 x12	x 5	8	"
Middle for doors	1 x12	x 5	8	"
Siding for doors	1 x 4½	x 6	3	"
Inside lining for sides	1 x 4½	x 11	1	"
Inside lining for ends	1 x 4½	x 8	2	"
Cant boards for sides	2¾x 2¾	x 11	1	"
Cant boards for ends	2¾x 2¾	x 8	2	"
Roofing boards, well seasoned	1 ¼	x 4	9	"
Flooring, planed side up	2 thick	x 8	8	S. yel. pine.
Pieces for covering nuts	1¾x 2¾	x 12	0	Wh. pine.

TIMBER IN TRUCKS.

Top bolsters	8¼x12½ in.	x 7 ft.	5 in.	Wh. oak.
Bottom bolsters	6¼x12½	x 7	5	"
Brake beams	4 x 6½	x 5	10	Hickory.
Truss blocks	3 x 6½	x 1	3½	Wh. oak.

TOTAL AMOUNT OF TIMBER.

Southern yellow pine	1,823½ ft.
White pine	1,771½ "
White oak	516¾ "
Hickory	52 "
	4,163¾ ft.

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THE *Railway Age* has received reports of rolling stock built during the present year by 64 railroad companies, showing an aggregate of 335 locomotives and 24,175 cars of all classes. Upon this basis an estimate is made of the amount of rolling-stock that is likely to be made by all the roads in the country during 1880, the sum total being 1,595 locomotives and 68,420 cars, at an estimated valuation of $65,679,920.

Detailed Cost of a Passenger Day Coach.

The following is a statement of the details of cost of a first-class passenger day car built in 1879 at the shops of the Kansas City, St. Joseph & Council Bluffs Railroad Co. at St. Joseph, Mo. The car is 46 feet in length and seats 50 passengers. The interior finish is in walnut, butternut and bird's-eye maple—Eastlake style. The total cost, as will be seen, is $3,775.74 ; but in consequence of the higher price of material, it is estimated that a car of the same description cannot be built now at the same shops for less than $4,200.

ITEMS OF COST.

Machinists			$14.97	
Blacksmiths			70.58	
Tinners			32.60	
Carpenters			784.30	
Painters			250.07	
Upholsterers			65.00	
Laborers			2.40	
Shop Expenses and Fuel			65.86	
Shop Expenses and Tools			153.24	
Master Mechanic and Assistant			65.92	
				$1,504.94
Wrought Iron	lbs.	5,583	.03	167.49
" "	"	57	.06	3.42
Miller Draw-Bars		2	20.00	40.00
Truck Equalizing Bars		4	....	98.25
Cable Chains	lbs.	60	.05½	3.30
Cast Iron	"	5,511	.02½	137.78
Nuts, Bolts and Washers	"	718	.03	21.54
Hexagon Nuts	"	24	.05	1.20
Lag Screws	"	66½	.08	5.32
Nails	"	144½	.04	5.78
Spring Steel	"	187	.07	13.09
Coil Spring for Trucks	"	8	3.07¾	24.62
Draw-Bar and Buffer Springs	"	4	1.82	7.28
Elliptic Springs	set	1	....	81.38
Wheels		8	10.75	86.00
Axles		4	9.75	39.00
Brasses	set	116	.22	25.52
Air Brakes	"	1	....	103.83
Carriage Bolts	lbs.	145	.02	2.90
Oil Box Gaskets		8	.15	1.20
Pine Lumber	ft.	216½	25.00	5.41
" "	"	351½	40.00	14.06
" Ceiling	"	829	30.00	24.87
Yellow Pine Sills	"	1,470	45.00	66.15
" " Fooring	"	623½	30.00	18.71
Ash "	"	300	40.00	12.00
" and Poplar	"	4,976½	40.00	179.06
Oak	"	1,655½	26.00	43.04
Walnut—Fulton	"	478	26.00	12.44
" —Chicago	"	780½	50.00	39.02
Elm	"	120	30.00	3.60
Butternut	"	230	40.00	9.20
Bird's-eye Maple Veneer	"	155	45.00	6.98
Screws	gross	64½	....	39.95
Sheet Iron	lbs.	137½	.04	3.50
Planished Iron	"	115½	.12	13.86
Charcoal	"	37½	.06	2.25
Tin—Sheet	"	179	.18	32.22
Solder	"	34	.14	4.76
Galvanized Iron	"	60	.12	7.20
Copper	"	12½	.26	3.25
Sheet lead	"	6½	.07	.45
" Brass	"	1	.45	.45
Lead Pipe	"	17	.06	1.02
Mineral Paint	"	59½	.10	5.95
White "	"	32	.08	2.56
Wood Filling	"	35½	.10	3.55
Car Color	"	45½	.15	6.83
Yellow Paint	"	30	.10	3.00
Green "	"	1	.20	.20
Tuscan Red	"	3½	.20	.70
American Vermilion	"	2	.25	.50
Drab	"	3	.10	.30
Varnish (black)	"	2	.50	1.00
Oil	"	1	.20	.20
Gold Leaf (books)		2½	.45	1.12
Bronze (papers)		2½	.25	.62
Varnish	gals.	6¾	4.50	30.38
Shellac	"	3⅞	2.20	8.52
Alcohol	"	7/16	2.20	.97
Paint Brushes		....	....	1.20
Putty Knives		1	.25	.25
Glass (lights)		37	.64	23.68
" (orange)		14	.78	10.88
" (ruby)		14	.60	8.40
Putty	lbs.	8½	.03	.25
Decorated Head Lining		1	....	83.32
Head Lining Nails		500	....	1.25
Seat Springs		24½	....	52.13
Tow	lbs	200	.03½	7.00
Hair	"	125	.30	37.50
Sheeting	yds.	70	.08	5.60
Cotton Duck	"	30	.70	21.00
Plush (scarlet)	"	64	2.12½	136.00
" (green)	"	30	1.81¼	54.38
" nails	gross	1¾	.65	.96
Mattress Twine	balls	2	.90	1.80
Linen Thread	"	2	.10	.20
Tacks	papers	72	.05	3.60
"	"	6	....	.77
Trunk nails	"	1½	.20	.30
Seat Arm		50	14.00	14.00
" Rivets		51	.06	3.06
" Back Molding		50	....	29.43
" Locks		50	.67½	33.75
Machine Screws		50	.01	.50
Brass Wire Cloth	ft.	55½	.45	24.97
Sash Locks (right and left)		56	for	23.52
Sash Locks		28	"	8.84
" Catches		28	"	11.76
" Stops		68	"	4.50
Blind Lifts		68	"	6.12
Sash Locks, Drop		2	.36	.72
Brass Tubing	lbs.	5	.05½	.28
Sash Springs		140	.07	9.80
Lamps		4	for	14.16
Match Strikes		4	.42	1.68
Lamp Rings		4	.42	1.68
Baggage Racks		26	....	55.75
Notice Plates		2	2.25	4.50
Bell Cord and Couplings		1	1.70	1.70
" " Bushings		4	.20	.80
" " Hangers		3	1.75	5.25
Coach Latches		1	4.00	4.00
" "		1	7.50	7.50
" Locks		2	3.25	6.50
Saloon "		1	3.25	3.25
" Latches		1	3.50	3.50
" Handles		1	1.00	1.00
" Hoppers		1	8.50	8.50
" Urinals		1	4.75	4.75
Coach Hinges	pair	3	2.25	6.75
" "	"	3	....	1.95
Brass Butts	"	1	12	.12
Strap Hinges	"	2	.06	.12
Cooler Cocks	"	1	1.25	1.25
Waste "	"	1	.85	.85
Brass Unions	"	1	.40	.40
Clout Nails	papers.	6	.10	.60
Nails	lbs.	2½	.08	.20
Tinned Nails	"	1	....	.05
Tacks	"	5	.05	.25
Iron Wire	"	10	.08	.80
Cotter Keys	doz.	3	....	.25
Split Keys	"	½	....	.03
Head-Light Chimneys		1	....	.10
Candles	lbs.	1⅛	.15	.17
Charcoal	bbls.	3½	.15	.53
Matches	box.	1	.05	.05
Stove Polish		2	.05	.10
" Brush		1	....	.10
Pure Rubber	lbs.	½	....	.25
Waste	"	5	.08	.40
Rags	"	31	.05	1.55
Chamois	"	1	....	.38
Engine Oil	galls.	1	.16	.16
Sheet Zinc	lbs.	50	.08	4.00
Blossburg Coal	tons	1½	.08	12.00
Gas-pipe Fittings		....	....	.15
Sand Paper	sheets.	433	.01	4.33
Glue	lbs.	34	.16	5.44
Filtres		4	....	.93
Brads	papers.	31	.05	1.55
Total cost				$3,775.74

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THE Union Iron and Steel Co., of Chicago, have just completed the most perfectly-equipped shops in the country for the manufacture of all kinds of railroad frogs, crossings, switches, etc.

The Altoona Shops of the Pennsylvania R. R.

The machine and car shops of the Pennsylvania Railroad, at Altoona, cover about 40 acres, and consist of a wheel foundry, a brass foundry, blacksmith shop, lathe shop, engine erecting shop, car shops and a chemical laboratory and testing department. About 100 locomotives are built every year, and 35 repaired per month. The locomotive erecting shop is about 200×60 feet, and is bridged by an enormous crane, capable of lifting and moving bodily a 50-ton locomotive. The crane has three movements, the first being the lift, and the other two the transverse and longitudinal motions. All of its motive power is derived from a fast-running endless hempen cord that moves at the rate of 5,500 feet, or more than a mile, per minute. The exertion of its power is controlled by pressing this cord against the friction wheel, which puts in motion the running gear of the crane. With it a locomotive is picked up with a chain tackle and carried from one side, or one end, of the shop to the other in a few minutes. In the lathe or turning shop are more than 20 different lathes engaged in planing off with mathematical precision the various rough cast parts of the machinery. On the long "traveler" of one lathe rests the great cast-iron bed frame of the locomotive, its rough surfaces being slowly cut away. On another rests the heavy steel tire of an engine wheel, its inner edge being cut out by slow revolutions, so that when it is finally "chilled" to meet the circumference of the wheel body, the joining shall be almost invisible. On another set of lathes the journal bearings of delicate-tinted phosphor-bronze are being cut so that their arcs and lines shall be actually perfect. In the machine shop near by are 10 trip-hammers, the heaviest striking with a weight of 2,500 pounds and the lightest 250 pounds. A large part of the work done here is the making of bolts, bars, clamps and other iron work for car construction.

The car shops will turn out about 4,000 new freight cars this year, and more than 100 new passenger cars. The company keep an average stock of 10,000,000 feet of lumber in their yards, in order that there may be no doubt about its being well seasoned. They make up into cars from 6,000,000 to 8,000,000 feet annually, consisting of white and yellow pine, live oak, black walnut, white wood, French walnut, maple and various other ornamental or cabinet woods. The cost of a freight car is about $525, and its average "life" or duration in service is about 14 years. The average cost of passenger cars is $5,500 each.

All of the steel and iron bought by the company, its lubricating and illuminating oils, its timber and its paint and japanning varnishes are subjected to the closest tests before they are accepted for use. Most of the steel used, both in the form of rails and for engine and wheel making, is obtained from the Cambria Steel and Iron Works at Johnstown. This steel is made by the Bessemer process, and every bloom of it is subjected to tests by the manufacturers. But with every rail or bloom of steel sold to the railroad company there is also a sample of the material sent for testing purposes, the sample and the lot being stamped in duplicate with the figures of the test results already obtained at the steel works. The railroad company then submits these to its own tests of tensile strength and elongation, and the result of every test is recorded. The quality of the steel is determined by the strain necessary to pull it apart, and by the percentage which it shows of stretching capacity, or toughness. The pieces of steel tested are in bars having a square thickness of half an inch, and they usually withstand a pulling strain, applied by hydraulic power, of 24,000 to 30,000 pounds before they break. The elongation varies from 10 to 20 per cent. on the average. In like manner every part of the steel used, which is to be subjected to wear, strain or shock, is tested down to crank-pins and stay-bolts. The pig-iron used in the iron and wheel foundries is also tested chemically to determine the proportion of silicon, carbon, phosphorus, and manganese which it contains, because their relative quantities may and do materially affect the quality of the casting produced. For example, it is held that iron containing more than 1½ per cent. of silicon will not chill, and for that reason iron containing more than that percentage of the mineral is not fit for use in the making of chilled iron wheels. These tests are made from borings of pig-iron. Sometimes 80 tons of pig-iron a day are used in the wheel foundry alone. The axle-iron bought by the company is also submitted to a breaking test before being accepted from the sellers. This consists in letting a weight of 1,640 pounds fall on the bar five times in succession, from a height of 25 feet. Of course it bends the iron, but its power to withstand shock and strain is determined very closely. Another test to which steel is sometimes subjected is what is called the cold-bending process, in which a bar of the metal is bent close double by great pressure, to test its resistance and tensile power.—*Exchange.*

The Car Lighting Problem.

For several years a large number of the passenger cars of the Pennsylvania Railroad have been lighted with the ordinary coal gas taken from city mains and compressed into receivers attached to the cars. The light produced, although very good, is not, in point of brilliancy, all that is desired, nor is it equal to that afforded by the best mineral sperm lamps. The only trouble is, there is not enough of it, and this may be said of all the methods of lighting which do not enable passengers to read ordinary print in every part of the car with ease and comfort. Cars can be furnished with the requisite quantity of light for this purpose, either with the common gas, oils, or even candles, provided the necessary expense is incurred. But to this there is a limit. A better light, if it is to be had at all, must not increase the expense of present methods, and this is the problem that is now in process of being worked out. In a conversation more than a year ago with one of the officers of the above-named road, he admitted the defects of present methods of lighting, and intimated that sooner or later they would be superseded by something very much better, and that this result would be obtained through a process by which common air could be charged in some way with the illuminating properties of petroleum.

It seems that this has already been done by Mr. Westinghouse, of the Westinghouse Brake Company, and that the method has been applied on one of the cars of the Pennsylvania Railroad with good results. With four burners, people can see to read in any part of the car, each burner giving an average light of 25 candles. A tank attached to the car is kept filled with compressed air by the action of the brake pump, and this air is carburetted by passing it over or through gasoline in a carburetting vessel placed under one of the end seats of the car, thus taking up or becoming charged with a sufficient quantity of the gasoline to convert it into a good illuminating gas. It is then conducted to the burners in the usual way. This application of petroleum for car lighting is at present only in its experimental stage, bnt the results obtained justify the hope that it will be so perfected as to really meet a want that is widely felt. As to the cost of the new method, we are not informed, but its practical usefulness will depend very much, if not altogether, upon this very important item.

Another improved method of car lighting, somewhat similar to the above, is reported to have been discovered and successfully applied by an East Indian railway official, and which is said to afford a cheap, simple and safe light. The gas is made in the carriages where it is used, and the process by which it is produced is thus described:

"The process consists in collecting the air and then carburetting it. This is effected by allowing an intermittent or pulsating supply of water to fall into and down a vertical pipe, the internal diameter of which is such that a drop of water fills it and by capillary attraction forms a piston. The upper end of the pipe is open to the atmosphere, so that the air can enter the tube between the pulsations and is forced down by the water into a receptacle, where the vertical pipe is trapped, through which it rises, and after, by a simple process, having undergone the necessary evaporation, passes through a long iron gas pipe about three inches in diameter. This pipe is filled with wood coke that has been previously well washed and dried, and then packed tightly into the pipe with wool, which is used to keep it from pulverizing; the coke and wool is then saturated with gasoline, and the air passing through becomes carburetted and converted into an inflammable gas of the purest and richest description. It is then let to the burners in the ordinary manner, but the arrangement is such that although the lights may be turned very low it cannot be altogether extinguished. The quantity of water required is about half a gallon per hour for two cubic feet of gas. The water from the tanks on the top of the first-class carriages is used and allowed to run to waste. In other carriages and in the brake vans a small tank is placed between the two roofs, and the wastage is caught in a small tank below, from which it is automatically pumped up again into the tank above; for engines the tank is placed at the back of the tender and the carburetter below it. The carburetter, when once charged will run for fifteen days without any trouble or attention whatever. The method of charging forms part of the patent, but the operation is such that an accident is impossible, and one very important feature is, that any gasoline that may be remaining in a liquid state after the charging, is all drained off so that none whatever will remain in the carriage; thus, should a collision at any time occur, no danger need be apprehended on that score."

Light and Dark Colors for Cars.

Mr. R. T. Crockett, of the Patten Car Works, Bath, Me., says that light colors are far superior to dark ones for cars, as regards economy and durability, the principal reason being that the foundation or body of the light colors is lead. Cars painted in these colors will look better after a year's service than will a dark-colored car after running six or eight months, the stock, varnish, time in painting, and other things being equal.

Mr. Wm. Davis, of the Canada Southern road, in a paper read at the St. Louis meeting of the Car Painters' Association, says substantially the same thing. In the discussion which followed the reading of the paper, Mr. Stout of the Kansas Pacific, took an opposite view, and was in favor of dark colors, as being the most suitable for railway coaches. He used drop black, white lead, golden ocher and a little Indian red, and avoided umber. This made a color that was a shade lighter than the so-called Pullman color. Varnish wore as well on it as on the gold lettering. Dark colors, moreover, did not show dirt. A mechanic might with as much propriety wear white clothes as coaches a light-colored exterior. He used lead priming, and varnished his cars every ten months.

Mr. Murff, of the Texas Pacific, used colors similar to the Pullman, and found it next to impossible to make them stand. Yellow color would bear more oil in the mixture, and the more oil we get without cracking the better. It holds the varnish well, and the varnish holds the color. Another point in favor of light colors was that they were far less effected by the heat of the sun, and this was an important consideration in the Southern States. The dark colors he had used were composed of five pounds burnt umber, same of sienna, two pounds ultramarine blue, and half a pound golden ocher.

Mr. Davis said he had repainted a car a dark color and revarnished it, and then put it with a yellow car in the same train, about three months ago, and run them together. A short time ago he took a wet cloth and rubbed a portion of each car, and found the brilliancy of the dark color was gone, while the light color was as good as when it was put on. The dark was the new Pullman color, as it is called.

Mr. Cooley, of the C. B. & Q. road, said that he had had the handling of both light and dark-colored coaches, and had never noticed any difference in the wearing of the varnish, or in cracking. He expected to burn the paint off every five years. If he had to maintain a hundred coaches, he would use yellow or light color. It was as difficult to touch up a light-colored car as a dark one. Yellows could not be got that would shade alike; even the highest priced English yellows would not shade exactly, but would come pretty near it by using pure chrome of lead or orange, with a little lemon chrome to impart brilliancy.

Some New Rules for Railways.

The Williamsport (Pa.) *Banner* publishes a new code of railway rules. We can only make room for the following:

There shall be three classes of trains—first, second and third—and they shall have right of way in the order named.

The first-class shall consist of coal trains only. They shall have the preference over everything else.

The second-class includes mail, construction and mixed trains.

The third-class consists of passenger trains—way, accommodation and express.

No passenger train shall leave a station until at least five coal trains have passed it.

A lamp upside down on an engine signifies that the fireman is drunk—the smoke-stack upside down that the engineer is drunk—and an engine upside down denotes that a rail was up.

Seven toots of the whistle denotes that there is a calf on the track. The fireman will go out on the pilot and attach two green flags to his tail. The calf will then run as an extra. If he don't make schedule time call the coroner.

When a baggage master acts as conductor he must put on airs—two airs if on a regular train and three airs if on an extra.

Trains approaching each other must always move in opposite directions and on different tracks.

No female will be allowed in the mail car.

No smoking cars, water tanks or closets will be allowed on trains which have a parlor car attached. For any of these luxuries the passenger must pay fifty cents.

On arriving at a station the conductor and engineer will go into the telegraph office and write home to their families. They will stay there until they know their train is behind time. They will then run back to the next station.

Each passenger may ask seven questions of the conductor between each two stations. The conductor must answer these questions civilly without swearing or looking mad.

Conductors must look after the comfort of passengers. When the conductor is looking after a female passenger, the baggage master will look after the conductor and a brakeman will look after the baggage master.

The uniform of conductors shall hereafter consist of a seamless sack, the mouth to be strapped around the neck like a mail bag. The conductor shall have his hands tied behind him, and wear a gag in his mouth. He shall carry an iron safe on his back, the key of which will be kept at Harrisburg.

The passenger must punch his own ticket and put it in the safe. He shall then tell the conductor where he was born and where he expects to die when he goes to. If the conductor is sassy he must also be punched.

At the end of every trip the conductor must make a written report of the number of cars, number, color and age of passengers, together with any accidents, deaths or births which may have occurred.

To each sub-division of ten miles there shall be one laborer, two foremen, three supervisors and four assistant engineers. Each of these shall have two clerks.

The supervisors must make a daily inspection of the track. This can usually be done best from the smoking car of a passenger train.

Foremen must visit their sections at least once a week, unless they are very busy at home.

They must, before each annual inspection, have the roads swept, the ends of all ties sand-papered, the faces of all embankments shaved, and all fences and telegraph poles whitewashed.

All subordinates must chew coffee for a week before inspection, so that their breath will not be offensive to the inspecting officials, none of whom ever drink.

An accurate account must be kept of all oil, waste, cinders, cigar-stumps and empty bottles gathered on the road-bed, and the foremen shall every year send a report of the same to the supervisor, and one dollar to the *Banner*.

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Smith's Continuous Safety-Lever Brake.

We have been furnished with a description of a Continuous Safety-Lever Brake, invented and patented by Dr. George Smith, of Stratford, Ontario, and intended to meet the want of a simple and cheap appliance by which the retarding pressure may be applied simultaneously to all the cars of a train. This is done by means of levers, pivoted to the bottom of the car and to which the brake rods are attached. On freight cars where single brakes only are required, a single lever is used, and the rods are fastened to it by short chains; but for freight or passenger cars requiring double brakes, double levers are used for the purpose of equalizing the pressure of the brake-shoes on the wheels, the brake rods being attached to a chain which passes through the lower plates of the lever and round rollers or pulleys, while a wire rope which runs continuously through the train passes through the other or upper lever. The brakes are applied by drawing upon the wire rope from either end of the train, thus operating the levers and drawing at the same time upon the rods and levers attached to the ordinary brakes in use, and applying the brakes to the wheels. When the tension of the rope is removed, the brake-shoes are released from the wheels, but in order that the levers may be thrown back to their original position, springs are used for that purpose.

The continuous wire rope connection from one car to another is maintained by means of couplings similar to those used for bell-cords. Cast steel couplings, costing about 17 cents each, are found to be sufficiently strong. A check-stop is placed under the car to hold the rope in case the clips should break, also guide-blocks made of wood. The rope is from $\frac{7}{16}$ to $\frac{1}{2}$ inch in diameter, this size being considered best for general use. The brakes can be applied simultaneously to 10 or 12 cars by one man. The mode of application is by a windlass similar to a ship's wheel, placed in the van, and having a ratchet set in it to hold the rope as fast as drawn up. The windlass gives perfect control of the train in making stops or running upon down grades, it having been found that five or six rear cars with brakes applied retard a train more than twice that number at the forward end; but provision has been made for their application to the forward cars by means of a friction appliance on the tender axle in which the momentum of the train is used for winding up the rope.

The cost of the brake for each freight car (not including windlass and friction appliance) is as follows:

33 feet $\frac{1}{2}$ in. wire rope	$2.64
1 patent lever	2.00
2 cast-steel couplings	.36
Stop and carrier blocks	.50
Spring	.50
	$6.00

The cost of the windlass for rear end of the train, and friction appliance for tender axle, complete, is $35, making the entire cost per car for a train of 22 cars, $8, or $7 per car for a train of 40 cars.

The inventor is of the opinion that no strictly utomatic brake can be devised for freight cars that will do the same service that a continuous brake of this description will do. A train with the former cannot be stopped automatically while backing up, nor to advantage while going up a grade. The cost of application is also very much more. He also claims that with his method, foreign cars, or others not equipped with it, can be controlled by placing a few cars that are equipped with it either in the front or rear of the train. The general advantages claimed for it are cheapness, simplicity and durability; certainty of action, perfect control; can be attached or repaired in any car shop; is adapted to mixed trains; does not require brakemen to go on top of cars while running; makes no noise; can be applied by hand; train momentum, or steam enables the engineer at forward end and conductor at rear end to control the train; and lastly, is easily kept in order and at small expense.

The brake has been in constant use for nine months on a wood train of the Grand Trunk Railway. Some trial tests were recently made on the Buffalo & Lake Huron Division, on a wood train of 18 cars, half of which were loaded.

First Test: On a heavy down grade and at a speed of 20 miles an hour, the train was stopped in 50 seconds, four of the brakes being applied from the tender and coupled to 10 cars from the rear end.

Second Test: Stopped the train from front only with four continuous brakes attached to empty flat cars in front; this stop was not so quickly made, but was considered good, considering the weight of train in rear of the part to which the brakes were applied and the heavy grade.

Third Test: With brakes and continuous rope connecting ten cars down the same grade, worked from the van only, the train was brought to a dead stand in 57 seconds, one brakeman doing all the braking.

Fourth Test: Sixteen of the flat cars fully loaded with wood, and two vans running down Seebach's grade, which is a heavy one, the train was brought to a full stop in one minute and 50 seconds, speed of train about 30 miles per hour. Brakes were applied from rear end only by one brakeman in the van.

Fifth Test: Stop was made on a level track, brakes applied and train loaded as in test four, in 72 seconds; speed about 27 miles per hour.

No difficulty was found in starting, as the brake shoes released without any trouble. The brakes apply as well in backing a train as in going forward.

Further information may be obtained by applying to the patentee, as above, or to S. S. Fuller, President of Stratford & Huron Railway, Stratford, Ontario.

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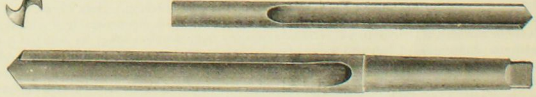
The Farmer Universal Lathe Drill.

The Farmer Lathe Drill and Tool Company, of Leominster, Mass., have designed and placed upon the market a patent universal lathe drill, as shown in the accompanying cuts. It is intended for use in machine shops, and particularly those in which copper and brass are worked. Its completeness as a drilling tool consists in the fact that its form is such as to remedy the defects of the tools of this class now in use in general machine work, and in the hands of apprentices and inexperienced workmen, while it retains all their advantages. It is not expected, of course, to perform impossibilities, such as drilling chilled iron and hardened steel, but for counterboring, slotting, cutting irregular-shaped holes, and holes that have been tapped, it is a most perfect tool. It can be used both as a rotary and chuck drill, and as it will not "catch," there is no danger in striking seams, blow-holes, and the like, nor will it "draw in" or bind. The minimum of resistance is also obtained, a $\frac{3}{4}$-inch universal drill being used with as much ease as a $\frac{1}{4}$-inch ordinary twist drill. It can also be run at a much higher rate of speed, and be put to a variety of uses where ordinary drills are not available. The lips are also very much stronger than those of a twist, or even of a forged drill. These drills are uniform as regards strength and size, and are an economical tool in a machine shop. Communications in relation thereto may be addressed to the manufacturers, as above.



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A Russian Railroad Officers' Car.

There has recently been built at a factory in Bohemia a pair of palace cars for a Russian railroad officer that seem to deserve the name. They are on trucks, like American cars, and about 53 feet long, with entrances at both ends. (The cars belong together.) One has a kitchen, with sleeping accommodations for the cook, a buffet-room finished in carved ebony and supplied with elegant table ware, and, finally, a dining-room finished in beautiful woods, with antique carved chairs for twelve persons, an elegant extension table, and lighted with a central chandelier bearing twenty-five wax candles, besides four other lights. Berths can be made up in this room also. In the connecting car is a bath-room provided with hot and cold water, a Field boiler heating the water for this and for warming the car also. There is a passage along the side of the car from which open in order a nursery, a bed-room, music-room, and an office-room, all connected by an annunciator and speaking-tubes with the servants' quarters. In the nursery is a child's bed, with drawers underneath for linen, and a berth oppposite for the nurse, with a closet at one end. The music-room is reported to be fairy-like in its beauty, with purple carpets, curtains, and arm-chair, with an ebony piano on one side, and on the other an elegant fire-place in the French style, in which in winter a cheerful fire adds to the steam heat which warms the other rooms of the car. There is also in this room a carved wardrobe carrying a chronometer, a round table of ebony, and a chandelier, while the ceiling is hung in white satin gathered in the center with a golden rosette. The bed-room is hung with dark-blue damask, and the bed on gilt French bedstead is covered with sky-blue satin and shaded by a canopy hung up by gilt hooks. The velvet carpet and the chairs correspond. The curtains are bordered with fine lace (what a chance for sparks and cinders). The walls as high as the bed are hung with dark-blue velvet. This bed-room opens into a toilet-room provided with every convenience, including a water-closet. The office has a dark carpet and hangings, and is provided with a simple walnut cylinder desk. Noise is reduced by thick carpets and hangings. Adjoining is a little room with a sofa and a mirror in a carved oak frame over one end, so arranged that when the car is at the end of the train one may lie on the sofa and see in the mirror the reflection of the country which the train has just passed.

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The Pennsylvania Railroad Company are converting their old steel rails into car wheels, at their shop in Altoona, by the Hamilton process. It is stated that they are better adapted to this use than the material which is used for many, if not most, car wheels.

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Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

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FREIGHT TRAIN BRAKES.

We desire to call special attention to the circular recently issued by the committee of the Car-Builders Association on this subject, which we print elsewhere. The increasing necessity of a train brake for freight cars, and the efforts of inventors to devise some practical and effective means by which the want can be supplied, elicited a lively discussion at the June meeting of the association, and also led to an enlargement of the committee, so that it now consists of five members instead of three, as formerly. It will be remembered that at the last, and one or two previous meetings, the old committee was arraigned somewhat sharply for not presenting or recommending in its annual reports something definite and tangible in the way of a freight train brake. Most railroad men were eager for some practicable plan that would supersede hand-brakes, and although many were skeptical, they naturally looked to the committee to clear up the subject, by saying what could or could not be done in this direction. Under the circumstances the committee has done all that could reasonably be expected of it. It has set forth what a freight train must do in order to be an improvement upon the hand-brake system, and it has reported such devices as have been brought to its notice. It could not, of course, without undue precipitation and the risk of making serious mistakes, single out any one or two and recommend them as being all that is desired, and this, with no adequate means for making experimental and practical tests, or even of becoming acquainted with all the inventions for the purpose that had been completed or that were in progress.

It must be borne in mind that any committee on this subject, composed of members of the Car-Builders Association, has peculiar difficulties to contend with. Its members have little time to spare from their regular business. It is not an easy thing for them to get together for consultation and comparison of views, and as regards well conducted, careful and decisive experimental tests, such as are absolutely necessary to determine the capacities of a train brake, the committee has no suitable facilities for making them. All that it can do is to gather information in the manner indicated in the circular it has issued. It must have models, descriptive drawings, and reliable reports of such experimental and practical working tests as may be made, not only of a few of the devices that have been brought forward by inventors, but of all that are of any real merit. Without this, the committee cannot make a report that will embody anything very specific, definite, tangible, or conclusive—nothing better in fact than what it has made before. We hope, therefore, that its appeal for aid and co-operation will not be allowed to pass unheeded. A freight train brake that will be approximately as valuable to that branch of railway service as air brakes are to passenger service, is a dead sure thing, sooner or later, and the more attention there is given to it now, the sooner will the end be attained. Let railroad men, then, as well as inventors and others who are interested in the problem, respond to the committee's circular by furnishing the information asked for to the chairman or to some one of the members, so that a good report will be forthcoming at the next meeting of the association.

THE CATTLE CAR PROBLEM.

Some genius out west claims to have solved the cattle car problem, and he has done it in the only practicable way in which it can be done. He divides the car into two compartments, and carries only one animal in each; or, in other words, he limits the number of horned cattle to be carried in a car, to two instead of sixteen, thus giving them a chance to ride comfortably and enjoy themselves. Now let the American Humane Society hand over to the inventor the $5,000 prize, and let all the roads adopt the car, and we shall hear no more about the cruelties of live stock transportation.

This may seem like jesting with a serious subject, but really it is not. If cattle cars can be improved so as to make the cattle more comfortable without increasing the cost of transportation, it would doubtless have been done before now. Palace stock cars were invented and patented ten years ago, that allowed each animal to lie down in his stall without being crowded by his fellows, and in which ample provision was made for watering and feeding—cars which were, in fact, as much of a luxury to cattle in the matter of rest and refreshment without interruption of the journey, as hotel cars are to human beings. We have a description of one of these cars before us now. It was 36 feet long and 9½ wide inside, which is 10 feet longer and a foot wider than the ordinary stock cars in use. The cattle were separated by movable partitions, which could be placed at any distance apart, according to the size of the animals. The cost of the car was about $1,000. It had swing-bar trucks and elliptic springs, and would carry 16 cattle of ordinary size and give them plenty of room. It is safe to say that no such cars are running on our roads to-day, nor is it likely that the offer of humane society prizes will tempt or force the roads to build or use them. It is with them a matter of business and competition. No road is going to run palace stock cars of extra size and weight, with the cattle packed in loosely in order to promote their physical comfort, while a rival line runs the old style of cars with the animals jack-screwed and tail-twisted into them until the inside pressure is all that the body-frame of the cars will safely bear. The universal tendency in railway freight transportation is to carry more paying weight in proportion to the weight of the cars, and it is not an easy thing to make live stock freight an exception. We would not discourage inventors who are struggling for the prize of $5,000. Whoever contrives a car that will ameliorate the condition of the cattle without increasing the cost of transporting them will be richly deserving, not only of this small pittance, but of a life royalty for every car used. Such a car must not only be a good thing in itself, but every railroad manager must be able to see at a glance that it is more profitable for his road to use it than to continue to use the ordinary stock cars. It is clearly assumed by the Humane Society that such a car is possible, and that it will make its appearance when a sufficient inducement is offered.

We sincerely hope the expectations of the society will be realized, and that the forthcoming car will be of such a kind as will not only enhance the comfort of the cattle that ride in it, but at the same time be more available for return freight than our present stock cars are. We do not quite see how this can be done. But if the same number of beef cattle can be carried in a car of the same size and weight that they are now carried in, and at the same time have a quarter or a third more room for rest and recreation, we do not see why a stock car cannot by some ingenious patent process, and without material cost, be transformed into a box car suited for miscellaneous freight. We suggest this as one of the points that inventors should not overlook. The more freight live stock trains can get to carry west, the more it lessens the cost of bringing cattle to the east, and enables shippers and transporters to provide them with more comforts during the long transit. This they are doubtless eager to do, and will do, if the financial aspects of the case can be satisfactorily arranged.

THE PITTSBURGH ACCIDENT.

In a case like this a coroner's jury has a somewhat difficult task to perform. Its verdict is expected to give voice to the popular judgment. It may not be difficult to ascertain the immediate causes of the accident and to say that if the engineer, conductor, brakeman and flagman had done thus and so it would not have occurred. These persons, however, are the mere instruments of a great corporation, a small fraction of the vast working force in its employ. Within their sphere, and independently of prescribed rules and regulations, they are unavoidably left to the exercise of a certain amount of discretion, and for which no automatic mechanism can be substituted. They can obey or disobey rules, they can be strict or lax, they can forget, misjudge, misunderstand, and be guilty of negligence without criminal intent. And this may be done habitually, day after day, with no bad results and with little or no apprehension on the part of managers, employés, or the public. But, all at once, a score or two of valuable lives are sacrificed in an instant in consequence of some apparently trifling oversight or inattention. The blame must be placed upon somebody, and so the coroner's verdict, as in the present case, divides it between engineer, conductor, and flagman, and charges the Pennsylvania Railroad Company with criminal negligence for not taking due precaution etc. Precisely what is meant by "due precaution" is not very clear. All that can be done in a precautionary way, by this or any other railway company, is to establish rules and employ subordinates of sufficient intelligence to understand and obey them. If the company does this it is not deserving of censure unless it can be shown that laxity of discipline has been tolerated and the breaking of rules connived at. As well might a government be blamed for the violation of its criminal code by an incendiary who fires a dwelling and burns up the occupants. Rules governing the movement of railway trains are nothing unless they are lived up to, and this depends entirely upon the will and action of individuals. There is in all rules an implied mental capacity on the part of some one to understand and appreciate their necessity and the importance of observing them. Therefore, it seems to us that railway companies cannot justly be charged with criminal negligence when an accident is not directly caused by bad rules, or no rules, connivance at disobedience, or the employment of subordinates that are manifestly incompetent. The term "criminal" applies to persons, and is usually associated with the ideas of indictment, trial, conviction, and a term of imprisonment. In popular estimation it is not strictly criminal for a person to blunder, miscalculate, or fail to foresee or provide for all the hazards of such a business as railroading. The public is eager and ready to take these hazards, and should bear its just share of blame when things go amiss. A "shocking accident" to-day does not deter one person in ten thousand from taking the same risk to-morrow and every day. People want to go here and there for business, pleasure or profit; and go they will, without a thought of switches, frogs, or block systems, even if they have to ride on the platforms, or stand up in the aisles. They are impatient of the least delay, and must get to their destination somehow, consoling themselves with the fatalistic notion that if they are to be transfixed with splinters, or parboiled with hot steam, so it will be and there is no help for it. There will be more accidents, not precisely like the one which happened at Pittsburg, perhaps, but none the less fatal. Coroners will sit upon them and verdicts will be rendered severely censuring somebody for neglect and a failure to take due precaution, etc. In the meantime there can be little doubt that the Pennsylvania Railroad officials will do all in their power to avoid the repetition of such a horror on their lines from the same or similar causes which seems to have led to this one.

INDEPENDENT WHEELS.

Rigid wheels and axles are regarded by most railroad men as indispensable, or as something which cannot be safely and economically superceded by any arrangement for an independent wheel movement. Yet ever since railroads were fairly introduced, inventors have been wrestling with the problem of an independent wheel, and it is safe to say that some of the devices of this class approach as near to mechanical perfection as the nature of the case will admit. Take any one or two of the best and subject them to fair, or even severe tests, in ordinary or extraordinary passenger train service, and they perform beautifully. There is no breakage, no undue friction or tax upon the motive power, no difficulty in lubrication, no liability to get out of order, and no extra attention is required. As compared with the performance of rigid wheels, it is claimed, and fairly demonstrated, that there is a very considerable saving in general wear and tear, motive power and fuel, the life of wheels, axles and brasses, and in sundry minor things. An independent wheel movement necessitates either a loose wheel or a divided axle. There must be a loose joint somewhere, which no inventive ingenuity can make equivalent to no joint. If no division at all is admissable, then there is an end of the matter, and arguments and tests are of no use. Yet most railroad men want very much to get rid of wheel-sliding, spreading of track, excessive friction, and tax upon the power in curving, provided it can be done with no additional risks and drawbacks to offset the advantages gained; but they do not seem to take kindly to any arrangement by which one wheel can move independently of the other on the same axle—the only way by which these troublesome things can be mitigated, if not wholly avoided. They seem to have a confirmed distrust, not only of every form of divided axle, but of the claims put forth in behalf of the best arranged devices of this class. If these contrivances are of no practical use, if they are mere mechanical curiosities showing how nicely a visionary theory can be made to work on paper, or in a well-constructed model, there should be some pretty conclusive evidence extant to that effect. The best of them can certainly be tested, and there can hardly be a more suitable place for doing it than on the tracks of the New York Elevated roads, with their sharp curves of ninety feet radius. The very idea of solid wheels and axles, with the axles held by the truck-frames rigidly parallel to each other, traversing curves of this kind even at slow speed, is apt to impress even unmechanical minds with a certain sense of insecurity, unfitness, and a wrong adaptation of means to ends. We are informed that at least two independent wheel devices were tried on the Metropolitan line soon after it was opened, but for some reason not made public, they were removed after quite a prolonged trial, and none but rigid wheels have since been used. We think it is fairly due to the road managers, inventors, and the public, that the cause of the removal should be known.

CAR-BUILDERS' MONTHLY MEETINGS.

A preliminary meeting was held at the Association Rooms, 113 Liberty street, New York, on the evening of Nov. 18, to arrange for holding the usual monthly meetings during the winter. Mr. L. Garey, the President of the Association, and a number of car-builders and others identified with railroad interests, were present. It was decided that the usual notice be given each month announcing the subject for discussion, and that efforts be made to procure competent persons to read papers or deliver addresses upon topics pertaining to car construction, economy and management.

The first regular meeting will be held on Thursday evening, Dec. 16, at which a paper will be read upon Car Painting, with special reference to the kind and quality of ingredients that will produce at all times the exact color or shade required. Master car-painters are invited to be present and give their views upon a subject of such growing importance in car construction, and which will then be presented for the first time at the monthly meetings.

◆

Car and Locomotive Builders in every part of the country have orders in hand that will keep them busy for months to come; and besides this, a great deal of new construction is going on in the road shops. Notwithstanding the large additions that have been made to the freight equipment of the roads within the past year, there is a general complaint of the scarcity of cars, with the probability that the demand for them will increase rather than diminish with the early closing of canal and lake navigation. This state of things indicates an unprecedented development of our internal commerce, which will make large demands upon the rolling stock facilities of the roads in future. The coming year bids fair to be one of great activity in car and engine building. It is also evident that the size and weight of both cars and engines will keep on increasing in order to meet the requirements of transportation, until the limit of strength will be reached in bridges, rails and journals as they now are.

◆

If full credit is to be given to some of the paragraphs that appear in the daily papers in reference to railroad business, an enormous "boom" would seem to be, not only impending, but in full blast. The following from the *Daily Graphic* is an average specimen of the class of paragraphs referred to:

> Mr. William H. Vanderbilt yesterday ordered the immediate manufacture of 5,000 new freight cars for the New York Central & Hudson River Railroad, and 3,000 additional freight cars for the Lake Shore road. A large number of new passenger cars were also ordered for both roads, including palace coaches, all of which, including a number of new locomotives, are to be begun forthwith. The requisition involves altogether an expenditure of $5,000,000.

This may be true, and we print it so that if it is true our readers may have the benefit of it. It is, if reliable, good news for car and locomotive builders, wheel makers, spring makers, and a host of dealers in miscellaneous supplies and material. But we really think if the statement could be simmered down so as to correspond with the actual facts, the figures would undergo a little modification. We have made some inquiries of parties who, from their position and relations with the road, ought to be pretty well informed, and so far as the freight cars are concerned, it seems that only 1,000 new ones have been ordered, half of them flat cars and gondolas and half grain cars. The story about the remaining 7,000 needs confirmation.

◆

A correspondent, referring to an article in our August number on the construction of car trucks, writes us that he has got a model that he thinks will very nearly fill the bill. The truck, he says, is to be made entirely of iron, will have in it less than one-third the number of pieces, and will weigh 200 pounds less than a Thielsen truck. There will be very little, if any, lateral motion of the car body, and the weight in passing inequalities of the track will be very nearly equal on the four corners of the truck and of the car body. The truck has side swinging, anti-friction bearings, which do away with swing-beams, centre-plates, and king-bolts, and prevent friction in swiveling. The writer requests us to make such remarks upon this as we may see fit, and we do so by saying that if his truck, in a year's service upon some road with a heavy and active traffic, will do all he claims for it, railroad men will do well to give it some attention.

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Our next issue will contain an engraved likeness of the late Enos Varney, Master Car-Builder of the Fitchburg road, with an accompanying biographical notice.

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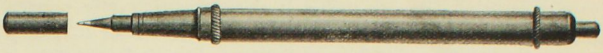
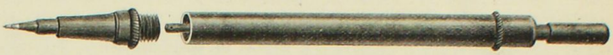
The Chicago & Alton has begun a new departure in their shop work at Bloomington—that of locomotive building. They have commenced operations on the construction of a large number of new engines, every part of which will be made by their own operatives in the Bloomington shops. Many engines have been rebuilt there, and of many a great part has been made there, but this is the first attempt at complete construction.

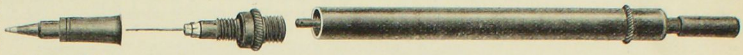
In Sweden, wherever a railway crosses a common road, gates are erected on each side. Five or ten minutes before a train is due these gates are closed and not allowed to be opened until the train has passed. There are no chances taken by railway companies; they simply fence impatient people out.

The Livermore Stylographic Pen.

The engravings show the form and construction of this invaluable writing instrument, which bids fair to supersede the lead pencil and ordinary pen and ink. It is really a fountain ink-pencil carrying the common writing ink in the holder and supplying it automatically to the point of the pen. The point being made of hard vulcanized rubber, gold and silver, with platinum and iridium combined, it is entirely non-corrosive and will wear as long as any gold pen, while it costs no more. A person with this pen is at all times ready to write a letter, receipt a bill, or jot down an item, whether he is in his office, in the street, or in a railway car. Conductors, freight agents, and railway men of almost every class, find them just the thing for their business. They can be carried in the pocket the same as a lead pencil, can be charged with ink in a few seconds, and will write 10,000 words without refilling. They are better than a pencil because the ink writing cannot be rubbed out. A trial of the Livermore pen will demonstrate its great superiority over any other form of writing instrument in use, and we strongly recommend it as being all that is claimed for it. It is manufactured by the Stylographic Pen Co., 102 Orange street, Providence, R. I.


The Pen as ready for use.


The Pen as ready to fill with ink.


The Pen as ready to clean.

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Train Brakes for Freight Cars.

The following circular has been issued by the committee of the Master Car Builders' Association on this subject:

New York, Nov., 1880.

To Master Car Builders, Railway Superintendents, and others interested in the Safe and Rapid Transportation of Freight:

Gentlemen: A committee was appointed by the Master Car Builders' Association, in June, 1876, on Freight Train Brakes, and a continual agitation of the subject since has brought out numerous inventions, the application of which, it is claimed, will place the cars under the engineer's control and enable him to move his train with perfect safety, twice the present rate of speed, thereby nearly doubling the capacity of the present rolling stock: and, whereas the benefits to be derived from such an appliance on freight trains are too apparent to need mention, the undersigned would simply add that the object of this circular is to collect all the reliable data on the subject possible before the next annual meeting of the Association, to be held in June, 1881, and hence enable the committee to make a report that shall be of interest to the railroads of the country.

You are cordially invited to assist us in this work by a careful consideration of and giving full answers to the following questions:

1. In your judgment is it practicable to operate and maintain a train brake on freight trains which requires a special connection between the cars?
2. Please give a full description of any freight train brake with which you are acquainted, with the first cost, or send tracings or model, and give address of the patentee.
3. Please give the result of any trial of freight train brakes you have witnessed, with name of road making the same.
4. Please examine critically any freight train brakes that may be brought to your notice, and give the committee the benefit of your opinion respecting their practicability.
5. If practicable, please make a thorough trial on your road of any freight train brake which you consider worthy of it.
6. Please give any additional information on the subject which you consider of importance.

Please confer with and send communications to the member of the committee whose address is nearest you.

C. E. Garey, Chairman
(New York & Harlem), Morrisania, N. Y.
Geo. Hackett
(Cent. of New Jersey), Elizabethport, N. J.
L. Garey
(N. Y. Cent. & H.River), Grand Cent. Depot, N.Y. City.
J. P. Coulter
(Ohio & Miss.), Aurora, Ind.
Tho. Aylesbury
(K. City, St. Jo. & C. Bluffs), St. Joseph, Mo.

◆

Thirteenth Annual Report of the American Railway Master Mechanics' Association.—We have received a copy of this report, the contents of which are mainly made up of committee reports and discussions. There are also a few illustrations. As most of the matter relates to the construction and performance of locomotives, a large portion of which has already been printed in the railway journals, there is little occasion for comment. The report covers only 124 pages, as against 184 last year and 240 the year before. This contraction in the official record of the doings of the association does not coincide with the constantly enlarging field of its usefulness. This, however, is not necessarily the fault of the association. If railroad men, master mechanics, engineers and others, who keep aloof, think the organization can be improved so as to do more or better work, let them just step in and show how it can be done.

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We have received a copy of the *Fourteenth Annual Report of the Master Car-Builders' Association.* It contains fifty more pages than the report of last year, the discussions having been more fully reported. The contents are substantially the same as published in the July Car-Builder, and consist of committee reports and discussions, with the constitution and full list of members.

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An Illinois Accomodation Train.

Upon a twenty-mile section of a certain Illinois railroad some attention is paid to the comfort and convenience of passengers. Accommodation trains are not run according to rigid schedule, but merely to suit the whims of those who patronize them. It is reported that a lady upon one of these trains wished to get off to see a neighbor. The cars were stopped fifteen minutes until she went up and found her friend at home. Then she made up her mind that she would stay there, whereupon the conductor and brakeman seized her trunk and carried it to the house, a distance of about a quarter of a mile. For this piece of politeness the lady returned her thanks and a peck of apples. The railroad men accepted both, and returning, divided the apples among the passengers. One of the passengers had an overdue note of a farmer who lived near the line of the road, and wanted to collect it. The conductor stopped the train, hunted up the man, sat down with him and reckoned the interest, got the money and handed it over to the happy recipient, who was warmly congratulated by his fellow travelers. Once more the train proceeded on its way. The apples presented by the lady having been consumed, the conductor again stopped the train as it was passing a large orchard, and all hands got out to fill their pockets. This was the third and last stop, except a very brief one to enable a boy to run back and get his hat which had been blown from his head while standing on the platform. In answer to remarks that it was a remarkably accommodating road, the conductor replied that this was the accommodation train, not merely in name but in reality. This is said to have actually occurred.

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The Baltimore *Sun* gives the following description of one of the new sleeping cars recently placed on the line of the Baltimore & Ohio R. R.: "The new sleeper has all the accommodations characteristic of the Pullman and Wagner sleepers, improved, it is claimed, in several particulars. It has seven sections on each side. The car, when the upper berths are closed, does not have the appearance of a sleeper, owing to the fact that the under sides of these berths present a flat surface decorated with embossed leather, in imitation of bronze casting, relieved by strips of dark molding, producing the effect of a richly paneled cornice the entire length of the car. Above this cornice are ventilating windows, of stained glass, and so arranged that the aperture can be graduated at pleasure. These windows are protected by wire gauze outside, which prevents the entrance of cinders. The 'head-lining,' or ceiling of the upper portion of the car, is handsomely painted on wood. To this ceiling are suspended eight double lamps, with argand burners, which serve to brilliantly illuminate the car, without dazzling the eye or casting a shadow. The seats are wide and comfortable (with arm-rests which justify the name), the outer sides resembling easy chairs of antique pattern. The seats and backs are upholstered with crimson plush. The windows, two to each section, are divided by narrow strips only, extend down to the arm-rest and give ample light. They are supplied with double sashes of one glass each, and are impervious to wind or dust. The floor of the car is covered with a thick velvet carpet of neat figure, in dark colors. The ladies' toilet department and gentlemen's lavatory, at opposite ends of the car, are fitted up with every requisite, including appliances for hot and cold water. The interior wood-work, as well as the movable card tables, seats and section partitions, is of black walnut, smoothly finished in oil. The exterior is painted a rich olive color, which is the uniform color of passenger coaches on the road, relieved by gilt panel striping and ornamental figures of unique design.

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The new friction-driver locomotive recently completed at the Grant Works, Paterson, N. J., has been partially tested at Fort Wayne, Ind. Mr. Fontaine, the inventor, writes as follows: "On Friday we took 24 heavily-loaded cars, and pushed them down about *two* miles, and pulled them back up a 25-foot grade at the rate of 25 miles an hour. We then took on 21 cars, several of them doubly loaded, weighing 474 tons and 200 pounds gross weight, and pulled them up the same grade, as above-mentioned, with perfect ease. We then took on 7 more loaded cars, pulling up the same grade as before, then took on 5 more with the same result, again 6 more, making 39 loaded cars, weighing 862 tons and 650 pounds gross weight, which she pulled over the same grade, and proved the extent of her ability to handle; all this was done with 135 to 140 pounds of steam." The speed of the Fontaine engine will be tested as soon as a new forward truck is made, with 40-inch steel-tired wheels, to replace the 28-inch cast wheels now in use. The order has been received at the Grant works and the work will be done as soon as possible.

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The Continuous Draw-Bar Co.—The office of this company has been removed from Cincinnati, Ohio, to 945 Ridge Avenue, Philadelphia. Mr. J. S. Patterson, of Cincinnati, heretofore Secretary and Treasurer, has resigned. The present officers of the company are Allen Middleton, President; John B. Quirk, Secretary and Treasurer; James T. Leighton, General Eastern and Southern Agent

New Haven, Conn., and Samuel Griffith, General Western and Southwestern Agent, 142 Dearborn street, Chicago, Ill. The company have purchased and now control the following continuous draw-bar patents: Allen Middleton, of Philadelphia, two patents; Griffith & Patterson, of Cincinnati, Ohio; J. Caum, Philadelphia, and D. Hoit, Albany, N. Y.

◆

THE EMPIRE PORTABLE FORGE CO. (A. G. Peck & Co.), Cohoes, N. Y., is bringing out a new cheap forge to compete with other cheap portable forges. It is called the "Western." This concern is prominent among the large manufacturers of axes and other edge tools, and gives special attention to this class of tools for railway purposes, including adzes, broad axes, broad hatchets, mattocks, etc. Their railroad adze is used extensively upon prominent roads at the West and Northwest, including the Chicago, Milwaukee & St. Paul, Lake Shore, and others. Purchasers of goods in this line will find the products of this company to be all that is claimed for them, as well as satisfactory in price and quality.

◆

A TWO-FOOT rule was given to a laborer in a Clyde boat yard to measure an iron plate. The lumper not being well up to the use of the rule, after spending a considerable time, returned. "Noo, Mick," asked the plater, "what size is the plate?" "Well," replied Mick, with a grin of satisfaction, "it's the length of your rule, and two thumbs over, with this piece of brick and the bredth o' my hand, and my arm from here to there, bar a finger."

"ANYTHING new or fresh this morning?" a reporter asked in a railroad office. "Yes," replied the lone occupant of the apartment. "What is it?" queried the reporter, whipping out his note-book. Said the railroad man edging his way toward the door, "That paint you are leaning against." The railroad man is now in the hospital, and the reporter is in jail.

OLD Mrs. Mathews, the mother of the celebrated comedian, was very juvenile looking till late in life. A friend of the family, meeting her son one day, and commenting on the fact, said, "By the way, Charles, how old *is* your mother?" "Well," answered the inimitable Charles, considering, "I hardly know. She *must* be 40; *I'm* 39."

A DROLL fellow up in Connecticut fished a rich old man out of the millpond, and received the offer of twenty-five cents from the rescued miser. "Oh, that's too much," exclaimed he; "taint wuth it;" and he handed back twenty-one cents, saying calmly, as he pocketed four cents, "That's about right!"

THE celebrated Dr. Dumoulin, being surrounded in his last moments by many of his fellow physicians who deplored his loss, said to them, "Gentlemen, I leave behind me three great physicians." Every one thinking himself to be one of the three pressed him to name them; upon which he replied, "Cleanliness, exercise, and moderation in eating."

"PLASE, sir, what's the fare from Dublin to Glasgow?" inquired a son of the Emerald Isle one day of the clerk of a shipping office. "Eighteen shillings," replied the other. "An' what d'ye charge for a pig or a cow?" "Oh! 1s. 6d. for a pig and 3s. for a cow." "Well," replied Pat, "book me as a pig."

THERE is a great difference between the rolling stock and the capital stock of a railroad. The former is kept on the move, but the latter always has to be held.

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur:

Cairo & St. Louis.—Mr. Geo. W. Prescott has been appointed Superintendent of Machinery in place of Mr. G. B. Simonds, resigned. Mr. Prescott was previously on the Chicago & Grand Trunk.

Canada Central.—Mr. T. Irwin is Mechanical Superintendent, vice Mr. H. J. Marshall, with head-quarters at Brockville, Ont.

Central of Georgia.—Mr. R. M. Barthlemas has been appointed Master Car-Builder, at Savannah, vice C. C. Millar, deceased.

Chicago, Burlington & Quincy.—Mr. W. D. Rowley has been appointed Master Mechanic of the Chicago Division, with office at Aurora, Ill. Mr. Rowley has been for several years Master Mechanic of the K. C., St. Jo. & C. B. road.

Chicago & Northwestern.—Mr. T. J. Nicholl has been appointed Superintendent of the Chicago & Dakota and Dakota Central railways and branches, with office at Huron, Dakota.

Des Moines, Adel & Western.—The name of this road has been changed to Des Moines Northwestern.

Illinois Midland.—Mr. Robert N. Pringle has been appointed Master Mechanic, in place of H. H. Osborn. Mr. John G. Clifford, the Purchasing Agent, has been filling the position since Mr. Osborn left.

Intercolonial.—Mr. F. V. Cooke is appointed General Store-Keeper, with office at Moncton, N. B., in place of L. B. Archibald, transferred to the Prince Edward Island road.

International & Great Northern.—Mr. R. H. Johnson is Master Mechanic, and Mr. H. H. Sessions, Master Car-Builder, with headquarters at Palestine, Texas. Mr. Sessions was formerly M. C. B. of the Rome, Watertown & Ogdensburg road.

Jeffersonville, Madison & Indianapolis.—Mr. Edward Austin, formerly Assistant Foreman, has been appointed General Foreman of the car department, in place of J D. McIlwain, resigned.

Kansas City, St. Joseph & Council Bluffs.—M. Frank A. Chase has been appointed Master Mechanic in place of Mr. W. D. Rowley, who has accepted the position of Master Mechanic of Chicago Division of the C. B. & Q. road, with headquarters at Aurora, Ill.

Lehigh Valley.—Mr. E. R. Brown, Master Car-Builder at the Packerton shops, died Nov. 1. No appointment to fill the vacancy will be made at present. Mr. John S. Lentz will attend to the duties of the position for the time being.

Louisville, New Albany & Chicago.—Mr. Marshall Morris has been appointed Chief Engineer and Superintendent of Road, with office in Louisville.

New Brunswick.—Mr. Thomas Hoben has resigned as Superintendent, and Mr. E. R. Burpee has been appointed his successor.

New York Central & Hudson River.—Mr. C. V. Deforest has resigned his position as Purchasing Agent, and Mr. R. C. Moore, of the New York & Harlem, has been appointed in his place. Mr. C. H. Burchard has been appointed Master Car-Builder at East Rochester, vice Mr. W. B. White, resigned.

New York & New England.—Mr. O. M. Shepard has been appionted Superintendent of Transportation, and also Superintendent of the Eastern Division, in place of Mr. H. M. Britton, resigned.

Prince Edward Island.—Mr. Luther B. Archibald has been agpointed Superintendent, in place of Alexander McNab, resigned. Mr. Archibald has been for some time General Store-Keeper of the Intercolonial road.

Wabash, St. Louis & Pacific.—Mr. W. O. Hewitt has been appointed General Master Mechanic, and Mr. R. M. Hemphill, General Master Car-Builder, of Peoria & Iowa Division, with headquarters at Peoria, Ill.

West Jersey.—Mr. Joseph Crawford has been appointed Superintendent, in place of Gen. W. J. Sewell, chosen Vice-President. Mr. Crawford has been for some time Superintendent of the Shamokin Division of the Northern Central.

CONTINUOUS DRAW-BAR PATENTS.

The following circular has been issued by the Secretary of the Western Railroad Association:

CHICAGO, Sept. 9, 1880.

To the Members of the Association:

GENTLEMEN: Claims have been pending for several years that the Continuous Draw-Bar sold by the Continuous Draw-Bar Company under the Middleton and the Griffith and Patterson patents is an infringement of patent 71,580, granted 3d December, 1867 (reissue No. 8,095, granted 19th February, 1878), to Edward L. Caum.

This Association has continuously advised against entertaining this claim, but to quiet all questions, and at our instigation, the Continuous Draw-Bar Company has recently purchased the Caum patent, its owners inserting in the assignment a full and absolute release to all the members of the Eastern and Western Railroad Associations from any and all liability for, or on account of, any infringement heretofore of said patent, Yours truly,

J. H. RAYMOND, Secretary, etc.

A. H. ABBOTT & CO.,
147 State St., Chicago,
TRACING CLOTH
Papers, Instruments, Etc.

JOHN W. MASURY & SON,
MAKERS OF STRICTLY FIRST-CLASS
RAILWAY VARNISHES,
AND MANUFACTURERS OF
CAR BODY COLORS.

By permission, we refer to the following Companies, for whom we have made Special Colors:

PENNSYLVANIA RAILROAD CO., Enoch Lewis, Purchasing Agent, Philadelphia, Pa.
PENNSYLVANIA CO., Wm. Mullins, General Purchasing Agent, Pittsburg, Pa.
BALTIMORE & OHIO RAILROAD CO., N. S. Hill, Purchasing Agent, Baltimore Md.
CHICAGO & ALTON RAILROAD CO., A. V. Hartwell, Purchasing Agent, Chicago, Ill.
CHICAGO & NORTHWESTERN RAILROAD CO., R. W. Hamer, Purchasing Agent, Chicago, Ill.
LEHIGH VALLEY RAILROAD CO., L. Chamberlin, Purchasing Agent, Philadelphia, Pa.
NORTHERN RAILROAD OF CANADA, F. W. Cumberland, Superintendent, Toronto, Ont.
NAUGATUCK RAILROAD CO., G. W. Beach, Superintendent, Waterbury, Conn.
PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD CO., S. A. Hodgman, Superintendent of Motive Power, Wilmington, Del.
NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO., R. N. Dowd, Commissary, New Haven, Conn.
UNION PACIFIC RAILROAD CO., } A. D. Clark, Purchasing Agent, Omaha, Neb.
KANSAS " " " }
CHICAGO, BURLINGTON & QUINCY RAILROAD CO., Wm. Irving, Purchasing Agent, Chicago, Ill.
LOUISVILLE, CINCINNATI & LEXINGTON RAILROAD CO., Wm. Mahl, Purchasing Agent, Louisville, Ky.
GRAND TRUNK RAILWAY N. Wall, Port Huron, Mich.
LITTLE ROCK & FORT SMITH RAILROAD CO., T. Hartman, Purchasing Agent, Little Rock, Ark.
GILBERT & BUSH CO., Troy, N. Y. }
WASON MANUFACTURING CO., Brightwood, Mass. }
BILLMEYER & SMALL MANUFACTURING CO., York, Pa. } Railroad Car Builders.
JACKSON & SHARP CO., Wilminton, Del. }
BARNEY & SMITH MANUFACTURING CO., Dayton, O. }

The advantages derived from the use of such Special Colors are many a few of which are found below:

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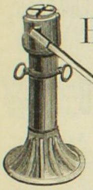

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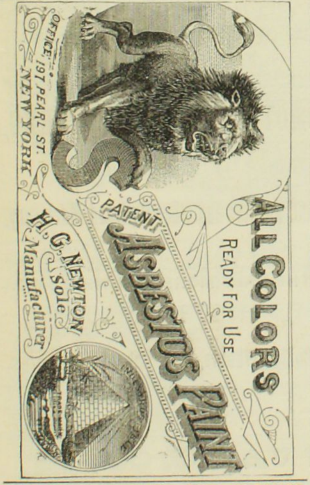

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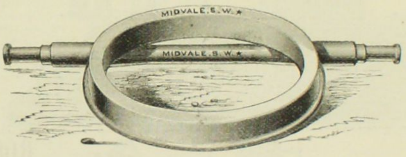
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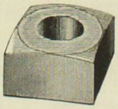

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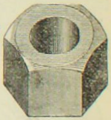

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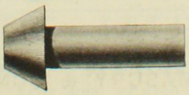

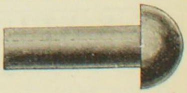

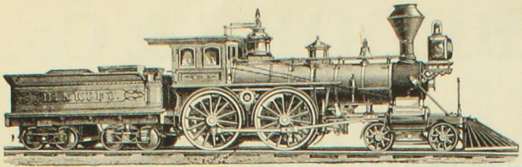

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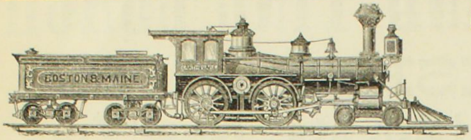

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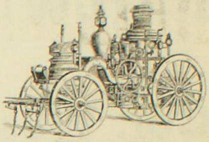

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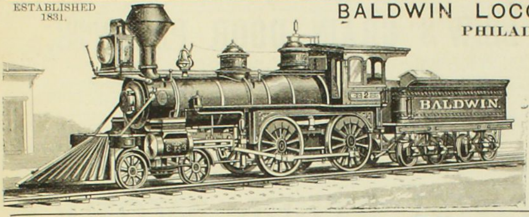

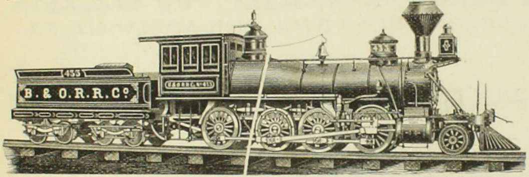

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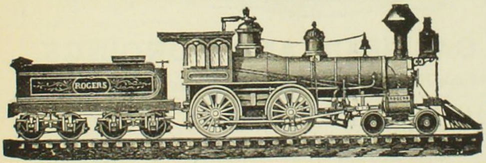

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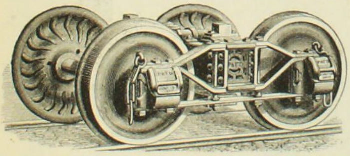

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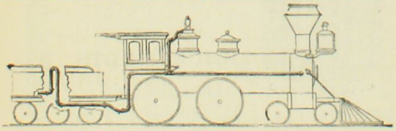

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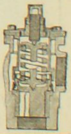

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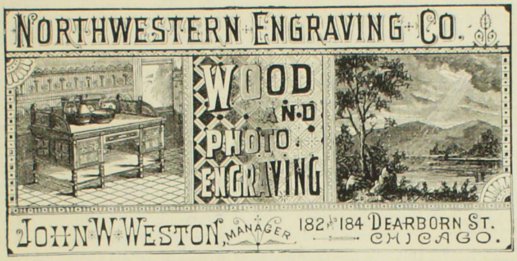

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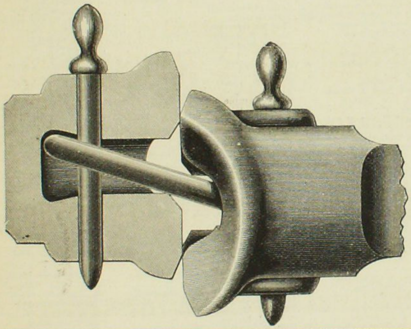

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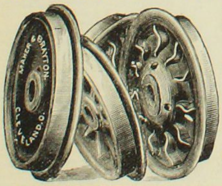
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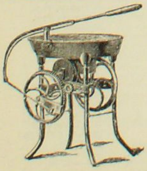

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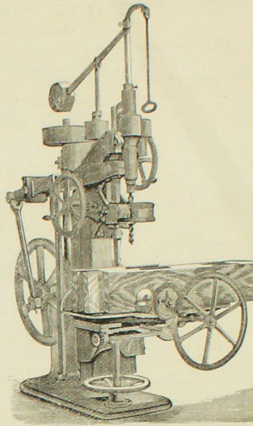

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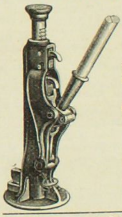

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Winona & St. Peters Div.	W. A. Scott	W. A. Scott	Winona, Minn.
Chicago & Alton	§§Wm. Wilson		Bloomington, Ill.
Kansas City & St. Louis Div.	J. C. Morse		Mexico, Mo.
Chicago, Burlington & Quincy	§§H. B. Stone	*J. Chistiansen	Aurora, Ill.
Galesburg Division	Robert Colville		Galesburg, Ill.
Iowa Division	Joel West		Burlington, Ia.
Iowa Division	C. W. Eckerson		Creston, Ia.
St. Louis Division	H. Whiting		Beardstown, Ill.
Chicago & Springfield	W. B. McKenna		Clinton, Ill.
Chicago, Clinton, Dubuque & Minn.	E. Smedley	E. Smedley	Dubuque, Ia.
Chicago, Rock Island & Pacific	‡T. B. Twombly	B. K. Verbryck	Chicago, Ill.
Keokuk & Des Moines Div.	S. W. Wakefield	Henry Kummer	Keokuk, Iowa.
Southwestern Division	R. O. Carscadin		Trenton, Mo.
Chicago & West Michigan	Russell Booth		Muskegon, Mich.
Chicago & Eastern Illinois	Allen Cooke	Allen Cooke	Danville, Ill.
Chicago & Iowa	H. S. Bryan		Aurora, Ill.
Chicago & Grand Trunk	†K. Blackwell		Battle Creek, Mich.
Chicago, Milwaukee & St. Paul	J. M. Lowry		Milwaukee, Wis.
La Crosse & P. Du. Ch. Div.		John Bailie	Milwaukee, Wis.
Northern Division		Wm. E. Kittredge	Milwaukee, Wis.
Iowa & Minn. Division	J. O. Pattie		Minneapolis, Minn.
Racine & S. West Div.	John Taylor	E. A. Eddy	Racine, Wis.
Sioux City & Dak. Div.	J. H. Moulton		Yankton, Dak.
Southern Minnesota Div.	J. B. Henney	J. B. Henney	Hokah, Minn.
Chicago & Paducah	T. J. Grosh	T. J. Grosh	Streator, Ill.
Chicago, Pekin & Southwestern	A. R. Overton		Joliet, Ill.
Chicago, Pekin & Southwestern		F. Shields	Streator, Ill.
Chicago, St. Louis & New Orleans	**W. H. Purdy		McComb C'y, Miss.
Chicago, St. Louis & New Orleans	E. D. Anderson		McComb C'y, Miss.
Chicago, St. Louis & New Orleans	J. M. Keith		Jackson, Tenn.
Chicago, St. Louis & New Orleans	J. F. White		Water Valley, Miss.
Chicago, St. Paul & Minneapolis	Matt Ellis	J. C. Fischer	Hudson, Wis.
Cincinnati, Wabash & Michigan	S. B. Tinker	S. B. Tinker	Wabash, Ind.
Cincinnati, Hamilton & Dayton	James Eckford	W. H. H. Allison	Cincinnati, O.
Indianapolis Division	Edward Moore		Indianapolis, Ind.
Cin., Ind., St. Louis & Chicago	§J. S. Patterson	J. S. Patterson	Cincinnati, O.
Cincinnati, Richmond & Chicago	Wesley S. Brewer		Richmond, Ind.
Cin. Rockport & So. Western	B. W. Smith	J. H. Bauman	Rockport, Ind.
Cincinnati, Sandusky & Cleveland	Jos. L. Porter		Sandusky, O.
Cincinnati Southern	J. Ivanson		Ludlow, Ky.
Cleve., Col., Cin. & Indianapolis	‡L. S. Young	††L. S. Young	Cleveland, O.
Indianapolis Division	A. R. McAlpine		Brightwood, Ind.
Columbus & Cin. Division	F. G. Kaufholz	Wm. Cleave	Cleveland, O.
Cleveland & Marietta	Tho. Robertson		Marietta, Ohio.
Cleveland & Pittsburg	N. E. Chapman	‖A. Steinbrunner	Cleveland, O.
Cleve., Mt. Vernon & Columbus	J. W. Holloway	J. W. Holloway	Akron, O.
Cleve., Tusc. Valley & Wheeling	W. F. Turreff	‖Geo. H. Pratt	Black River, O.
Cobourg, Peterboro & Marmora	Wm. Polson		Cobourg, Canada.
Columbus & Hocking Valley	I. G. Hutchins	J. M. Rockafield	Columbus, O.
Columbus & Toledo	I. G. Hutchins	J. M. Rockafield	Columbus, O.
Concord	J. T. Gordon	J. T. Gordon	Concord, N. H.
Concord & Portsmouth	J. T. Gordon	J. T. Gordon	Concord, N. H.
Concord & Claremont	**J. N. Lauder		Concord, N. H.
Connecticut River	§Wm. H. Stearns	R. Hitchcock	Springfield, Mass.
Connecticut Valley	S. E. Brewer	S. E. Brewer	Hartford, Conn.
Connecticut Western	John C. Barton		Hartford, Conn.
Conn. & Passumpsic Rivers	John R. Hubbard		Lyndonville, Vt.
Corning, Cowanesque & Antrim	O. C. Patchell	O. C. Patchell	Corning, N. Y.
Cumberland Valley	A. S. Hull	G. W. Nitterhouse	Chambersburg, Pa.
Cumberland & Pennsylvania	N. W. Howson	Nathan Binnix	Mt. Savage, Md.
D			
Dak. So. & Sioux City & Pembina	J. H. Moulton	J. H. Moulton	Yankton, Dak.
Danbury & Norwalk	N. M. George	N. M. George	Danbury, Conn.
Danville & Southwestern	B. L. Baldwin		Danville, Ill.
Davenport & Northwestern	H. E. Woods		Davenport, Ia.
Dayton & Union	H. S. Gordon	H. S. Gordon	Dayton, O.
Dayton & Southeastern	Wm. E. Cooper		Dayton, O.
Dayton & Michigan	John Black		Lima, O.
Delaware, Lackawanna & West.	Walter Dawson	Robert McKenna	Scranton, Pa.
Morris & Essex Division	W. H. Lewis		Kingsland, N. J.
Morris & Essex Division		J. W. Baker	Dover, N. J.
Oswego & Syracuse Division	James Buchanan		Syracuse, N. Y.
Utica, Chenango & Susq. Div.	Tho. Thatcher		Utica, N. Y.
Bloomsburg Division	Charles Graham		Kingston, Pa.
Delaware & Chesapeake	Jos. A. Baynard		Easton, Md.
Delaware & Hudson Canal Co.	**R. C. Blackall		Albany, N. Y.
Delaware & Hudson Canal Co.		T. Orchard	Carbondale, Pa.
Rensselaer & Saratoga Div.	J. L. Corey	John Wicks	Green Island, N. Y.
Denver Pacific	§R. McDougall	‖John Clock	Denver, Col.
Denver & Rio Grande	N. W. Sample	N. W. Sample	Denver, Col.
Denver, South Park & Pacific	James H. Kirk	James H. Kirk	Denver, Col.
Des Moines & Fort Dodge	John McGrayel	E. A. Avery	Grand Junction, Ia.
Detroit & Bay City	R. P. Baillie		Bay City, Mich.
Detroit, Grand Haven & Mil.	Fred Parker		Detroit, Mich.
Detroit, Lansing & Northern	G. C. Watrous	G. C. Watrous	Ionia, Mich.
Dorchester & Delaware			Cambridge, Md.
Dunkirk, Allegheny Val. & Pitts.	J. C. Haggett	J. C. Haggett	Dunkirk, N. Y.
E			
East Broad Top	Wm. C. Maynes		Orbisonia, Pa.
Eastern	J. D. Billings		East Boston, Mass.
Eastern Kentucky	D. L. Weaver	D. L. Weaver	Riverton, Ky.
E. Tennessee, Virginia & Georgia	C. A. Hodge	Joseph Armbruster	Knoxville, Tenn.
Erie & Pittsburg	J. N. Wood	J. N. Wood	Erie, Pa.
Eureka & Palisade	J. M. Alson		Eureka, Nev.
European & North Am. (of Maine)	A. O. Bailey	A. O. Bailey	Mattawamke'g, Me.
Evansville & Terre Haute	John L. White	Joseph Stiker	Evansville, Ind.
Evansville, Terre Haute & Chic.	§§W. D. Macfarlane		Terre Haute, Ind.
F			
Fitchburg	§§Geo. A. Cooledge	Enos Varney	Charlestown, Mass.
Vermont & Mass. Div.	W. A. Foster		Fitchburg, Mass.
Flint & Pere Marquette	T. J. Hatswell	T. J. Hatswell	E. Saginaw, Mich.
Florida Central	James S. McElroy	James S. McElroy	Jacksonville, Fla.
Flushing, North Shore & Central	Thomas Meehan	‖Edward Riley	L. I. City, N. Y.
Fort Wayne & Jackson	C. W. Hollister		Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	Wm. McPhail	Wm. McPhail	Fort Wayne, Ind.
G			
Galv., Harrisburg & San Antonio	D. T. Davis		Harrisburg, Tex.
Galveston, Houston & Henderson	J. G. Conlon		Galveston, Tex.
Geneva, Ithaca & Sayre	J. N. Weaver		Waverly, N. Y.
Geneva, Ithaca & Sayre		E. R. Brown	Packerton, Pa.
Georgia	John S. Cook	T. M. Preval	Augusta, Ga.
Grand Haven	A. S. Parish		Allegan, Mich.
Grand Tower & Carbondale	Hugh Smith	Hugh Smith	Grand Tower, Ill.
Grand Trunk	†Herbert Wallis	Wm. McWood	Montreal, Canada.
Grand Trunk	‖Warren Noyes		Gorham, N. H.
Grand Trunk		‖Duncan Menish	Portland, Me.
Grand Rapids & Indiana	J. M. Boon		Fort Wayne, Ind.
Grand Rapids & Indiana	‖J. R. Fish	‖J. R. Fish	Gr'nd Rapids, Mch.
Grayville & Mattoon	C. H. Cory		Mattoon, Ill.
Great Western, of Canada	†C. K. Domville		Hamilton, Can.
Great Western, of Canada	C. F. Hanson	Henry Childs	London, Ont.
Green Bay & Minnesota	‖Edw. Osborne		Green Bay, Wis.
Greenville & Columbia	W. J. Parrish		Helena, S. C.
Gulf, Colorado & Santa Fe	Geo. B. Nicols	‖W. H. Martin	Galveston, Texas.
H			
Hanover Junction & Gettysburg	John J. Bingley	Henry Britcher	Hanover, Pa.
Hannibal & St. Joseph	Tho. G. Gorman	Tho. G. Gorman	Hannibal, Mo.
Havana, Rantoul & Eastern	J. McCarthy		Rantoul, Ill.
Housatonic	N. Slingland	J. J. Ferris	Falls Village, Conn.
Houston, East & West Texas	J. E. Wiggin		Houston, Tex.
Houston & Texas Central	L. C. Noble	James McGee	Houston, Tex.
Huntingdon & Broad Top	Wm. Barkla		Saxton, Pa.
I			
Illinois Central	**S. J. Hayes	W. B. Snow	Chicago, Ill.
Chicago Division	Henry Schlacks		Chicago, Ill.
South Division	David Oxley		Centralia, Ill.
North Division	J. B. Edams		Amboy, Ill.
Iowa Division	Thomas W. Place		Waterloo, Ia.
Springfield Division	W. B. McKenna		Clinton, Ill.
Illinois Midland	R. N. Pringle		Paris, Ill.
Illinois & St. Louis	J. H. Smith		Belleville, Ill.
Illinois & St. Louis		Charles Rothe	E. St. Louis, Ill.
Indianapolis, Decatur & Springfield	Pulaski Leeds		Indianapolis, Ind.
Indianapolis, Peru & Chicago	John McKenna	John McKenna	Peru, Ind.
Indianapolis & St. Louis	A. J. Sanborn	A. J. Sanborn	Mattoon, Ill.
Indiana, Bloomington & Western	C. A. Thompson	C. A. Thompson	Urbana, Ill.
International & Great Northern	R. H. Johnson	H. H. Sessions	Palestine, Tex.

Railroad.	Master-Mechanic.	Master Car-Builder.	Residence.
Intercolonial	†H. A. Whitney	Edw. Shaffer	Moncton, N. B.
Iron	Perry Scott	Clem. Roetling	Ironton, O.
J			
Jacksonville, Pensacola & Mobile	Jas. D. Hollister		Tallahassee, Fla.
Jeffersonville, Mad. & Indianapolis	Wm. Swanston	‖Edw. Austin	Jeffersonville, Ind.
Jacksonville, N. West. & S. East	B. J. Miller		Jacksonville, Ill.
Joplin	P. T. Butterly	P. T. Butterly	Girard, Kan.
Junction & Breakwater	J. A. Maguire		Lewes, Del.
K			
Kansas City, Ft. Scott & Gulf	W. D. Rowley		St. Joseph, Mo.
Kansas City, Fort Scott & Gulf	J. S. McCrum	A. N. Montier	Kansas City, Mo.
Kansas City, Lawrence & South'n	J. S. McCrum		Kansas City, Mo.
Kan. City, St. Jo. & Coun. Bluff	Chase	‖Theo. Aylesbury	St. Joseph, Mo.
Kansas Central	Wm. McCall		Leavenworth, Kan.
Kansas Pacific	**John MacKenzie	T. B. Roberts	Armstrong, Kan.
Kaw Valley Division	James Long		Armstrong, Kan.
Smoky Hill Division	John B. Daily		Ellis, Kan.
Denver Division	R. McDougal	‖John Clock	Denver, Col.
Kentucky Central	J. R. Ledyard	J. L. Hackathorn	Covington, Ky.
Knox & Lincoln	E. Bolton	C. L. Turner	Bath, Me.
L			
Lake Erie & Western	¶¶Everett Clemens		Fremont, Ohio.
Lake Erie & Western	¶H. L. Cooper		Lafayette, Ind.
Lake Ontario Southern	Geo. Thompson	Wm. Currier	Sodus Point, N. Y.
Lake Shore & Michigan Southern	‡James Sedgley	††John Kirby	Cleveland, Ohio.
Michigan Southern Division	Geo. W. Stevens		Elkhart, Ind.
" "		Frank O. Bray	Adrian, Mich.
Toledo Division	J. M. Sanborn	W. O. Smith	Norwalk, Ohio.
Erie Division	L. O. Gassett	J. Withyecombe	Cleveland, Ohio.
Buffalo Division	Edward Studley	A. C. Robson	Buffalo, N. Y.
Lehigh Valley	John I. Kinsey		South Easton, Pa.
Lehigh Valley	P. Hofecker		Weatherly, Pa.
Lehigh Valley	John Campbell		Delano, Pa.
Lehigh Valley	D. Clark		Hazleton, Pa.
Lehigh Valley	A. Mitchell		Wilkesbarre, Pa.
Little Rock & Fort Smith	James Eblin	James Malone	Argenta, Ark.
Little Rock, Miss. River & Texas	Joseph Taylor	Joseph Taylor	Arkans's City, Ark.
Los Angeles & Independence	Jas. Velsir	‖J. S. Young	Los Angeles, Cal.
Louisville, New Albany & Chicago	Geo. Ruhlandt	Geo. Ruhlandt	New Albany, Ind.
Long Island	§Thos. Meehan	Hugh Longest	L. Isl'd City, N. Y.
Louisville, Cincinnati & Lexing'n	A. Schaeffer	A. Schaeffer	Louisville, Ky.
Louisville & Nashville	**Reuben Wells		Louisville, Ky.
Nashville & Decatur Div	W. H. Thomas	J. P. Furguson	Nashville, Tenn.
South & North Ala. Div	C. W. White		Birmingham, Ala.
Memphis & Ohio Div	Thos. Walsh		Memphis, Tenn.
Clarksville Division	Wm. Adair		Bowling Green, Ky.
Ev., Hen. & Nashville Div	W. H. Thomas		Nashville, Tenn.
M			
Macon & Brunswick	R. Wagnon	R. Wagnon	Macon, Ga.
Maine Central	J. W. Philbrick	J. W. Philbrick	Waterville, Me.
Maine Central		C. H. Kenison	Augusta, Me.
Manchester & Lawrence	J. T. Gordon	J. T. Gordon	Concord, N. H.
Manhattan Beach	Lewis James		Bay Ridge, L. I.
Manhattan Elevated	T. W. Peeples		New York, N. Y.
Marietta & Cincinnati	E. M. Bosley	E. M. Bosley	Chillicothe, Ohio.
Marquette, Houghton & Onton'gn	‖W. H. Williams	H. D. Lyons	Marquette, Mich.
Memphis, Paducah & Northern	G. M. Taylor	G. M. Taylor	Paducah, Ky.
Memphis & Little Rock	Tho. Rennell	P. Twitchell	Argenta, Ark.
Memphis & Charleston	§H. N. Burford	J. J. Kasey	Memphis, Tenn.
Michigan Central	S. H. Edgerly		Jackson, Mich.
Michigan Central		††Robert Miller	Detroit, Mich.
Midland of New Jersey	W. C. Ennis		Wortendyke, N. J.
Milwaukee, Lake Shore & West'n	S. Charnly		Manitowoc, Wis.
Minneapolis & St. Louis	Tho. Downing	Tho. Downing	Minneapolis, Minn.
Mineral Point	Robert Hay	Robert Hay	Mineral Pt., Wis.
Mineral Range	George F. Coon		Hancock, Mich.
Mississippi & Tennessee	Geo. Haszinger	S. J. Bolton	Memphis, Tenn.
Missouri & Western	A. C. Persing		Pierce City, Mo.
Missouri, Kansas & Texas	H. H. Alexander		Dennison, Texas.
Missouri, Kansas & Texas	**G. W. Cushing	John C. Barber	Sedalia, Mo.
Missouri, Kansas & Texas	Wm. T. Small		Parsons, Kan.
Missouri Pacific	§§John Hewitt	John Hodge	St. Louis, Mo.
Missouri Pacific	R. D. Grant		St. Louis, Mo.
Missouri Pacific	Geo. W. Walshe		Sedalia, Mo.
Missouri Pacific	H. V. Faries		Atchison, Kan.
Mobile & Montgomery	C. W. White	Lewis Barham	Montgomery, Ala.
Mobile & Girard	J. C. Albrecht	A. J. Nix	Columbus, Ga.
Mobile & Ohio	R. H. Briggs	J. T. Booth	Whistler, Ala.
Mobile & Ohio	John Fitzgerald		Macon, Miss.
Mobile & Ohio	M. T. Carson		Jackson, Tenn.
Montgomery & Eufaula	D. M. Gugel	James A. Knight	Macon, Ga.
Morgan's Louisiana & Texas	N. Tilton	Wm. O'Brien	Algiers, La.
N			
Nashua & Lowell	S. A. Davis	S. A. Davis	Nashua, N. H.
Nashville, Chattan'ga & St. Louis	James Cullen	J. G. Sawyer	Nashville, Tenn.
St. Louis Division	L. B. Salisbury	W. H. H. Price	Mt. Vernon, Ill.
Naugatuck	Henry Hanford	George W. Gray	Bridgeport, Ct.
Nebraska	D. Hawksworth		Plattsmouth, Neb.
Nevada Central	J. C. Fisher		Battle Mountain, Nev.
Newburg, Dutchess & Connecticut	W. G. Vanbuskirk		Dutchess J'n, N. Y.
New Brunswick	P. A. Logan	P. A. Logan	Fredericton, N. B.
New Brunswick & Canada	Tho. Armstrong	G. Houlton	St. Andrew's, N. B.
New Haven & Northampton	Henry Fox	John Sweeny	New Haven, Ct.
New Jersey & New York	J. S. Drake		Jersey City, N. J.
New Jersey Southern	Rufus Blodgett		Manchester, N. J.
New Orleans, Texas & Mobile	§Josiah Bettis		Mobile, Ala.
New York, Lake Erie & Western	§§F. M. Wilder		Susquehanna, Pa.
New York, Lake Erie & Western	J. H. Vreeland		Jersey City, N. J.
New York, Lake Erie & Western		‖J. N. Mileham	Jersey City, N. J.
New York, Lake Erie & Western	J. Van Vechten	‖J. Van Vechten	Port Jervis, N. Y.
New York, Lake Erie & Western	V. Blackburn		Susquehanna, Pa.
New York, Lake Erie & Western		‖D. B. Goodell	Elmira, N. Y.
New York, Lake Erie & Western	George H. Griggs		Hornellsville, N. Y.
New York, Lake Erie & Western	Chas. O. Vedder	‖M. Wilder	E. Buffalo, N. Y.
New York, Lake Erie & Western	‖Jos. Bradt		Rochester, N. Y.
New York, Lake Erie & Western	Theo. Wheeler		New York, N. Y.
New York & Harlem		C. E. Garey	Morrisania, N. Y.
New York & Harlem		††Leander Garey	New York, N. Y.
New York Central & Hud. River	§§G. B. Van Vorst	D. Hoit	West Albany, N. Y.
New York Central Division	§§Henry Watkeys		Syracuse, N. Y.
New York Central Division	§§Amos Gould		E. Buffalo, N. Y.
New York Central Division	§§S. L. White	Richard Donaby	Niagara Falls, N. Y.
New York Central Division		E. A. Olmstead	E. Buffalo, N. Y.
Hudson River Division	§§Wm. Buchanan	Peter Smith	New York, N. Y.
New York Central Division		C. H. Burchard	E. Rochester, N. Y.
New York, Ontario & Western	Edw. Minshull		Middletown, N. Y.
New York & New England	§§Geo. E. Boyden	Elias E. Pratt	Boston, Mass.
Norwich & Worcester Div	Richard Colburn	John W. Marden	Norwich, Ct.
Hartford Division	E. M. Humstone	S. Howland	Hartford, Conn.
New York, N. Haven & Hartford	§§H. Kettendorf	James Denver	New Haven, Ct.
Hartford Division	§§Jno. Henney, Jr.	L. Packard	Hartford, Ct.
New York, Penn. & Ohio	‡William Fuller	††J. H. F. Wiers	Cleveland, O.
New York, Penn. & Ohio	J. A. Cooper	D. S. Dockstader	Meadville, Pa.
New York, Penn. & Ohio	N. Wright	W. G. Huggard	Cleveland, O.
New York, Penn. & Ohio		S. V. Smith	Kent, O.
New York, Penn. & Ohio	William Hill	J. W. Holmes	Galion, O.
New York, Penn. & Ohio		‖J. T. Fosdick	Salamanca, N. Y.
New York, Penn. & Ohio		‖Geo. Wilson	Dayton, O.
Northern Central	§§R. H. Soule	‖G. W. Demarest	Baltimore, Md.
Northern Central	J. M. Coale		Baltimore, Md.
Northern Central	James Strode	‖J. C. Dyott	Elmira, N. Y.
Northern New Hampshire	**Jas. N. Lauder		Concord, N. H.
Northern of Canada	Peter Clark	Peter Clark	Toronto, Can.
Northern Pacific	**A. P. Farrar	A. P. Farrar	Brainerd, Minn.
Dakota Division	A. Rupert		Fargo, Dak.
Pacific & P. Oreille Div	C. Z. Sanders	Tho. G. Davis	New Tacoma, W. T.
Northeastern		W. H. Day	Florence, S. C.
North Pacific Coast	James Walch		Saucelito, Cal.
Northern & Northwestern	P. Clark		Toronto, Can.
O			
Ogdensburg & Lake Champlain	Abraham Klohs		Malone, N. Y.
Ohio Central	J. B. Morgan		Bucyrus, O.
Ohio & Mississippi	‡J. F. Sechler		Vincennes, Ind.
Ohio & Mississippi		J. P. Coulter	Aurora, Ind.
Cincinnati Division	John Thumser		Seymour, Ind.
Springfield Division	E. K. Sechler		Pana, Ill.
Old Colony	J. K. Taylor	A. Gleason	Boston, Mass.
B. C. F. & N. Bedford Div	Geo. W. Reynolds	Sam. Stevens	Taunton, Mass.
Oregon & California	§§J. Brandt		Portland, Oregon.
Oregon Railway & Navigation Co.	J. F. Curtis	Chas. Phipps	Dalles, Oregon.
P			
Paducah & Elizabethtown	W. D. Robb	W. D. Robb	Elizabethtown, Ky.
Painesville & Youngstown	J. H. Jones		Painesville, O.
Panama	Thos. S. O'Brien		Aspinwall, U. S. C.
Parker & Karns City	Philip Davies	Wm. Wolford	Parker City, Pa.
Pensacola & Selma	R. H. Kelly		Selma, Ala.
Pennsylvania	§§T. N. Ely		Altoona, Pa.
Pennsylvania	H. D. Garrett	I. W. Van Houten	W. Philadelphia, Pa.
Pennsylvania	E. L. Caum	Samuel W. Myers	Harrisburg, Pa.
Pennsylvania	G. W. Strattan	John P. Levan	Altoona, Pa.
Pennsylvania	D. O. Shaver	J. G. Stewart	Pittsburg, Pa.
New Jersey Division	L. A. Bosdevex	E. F. Bosdevex	Meadow Shops, N. J.
New Jersey Division		David H. Baker	Jersey City, N. J.
New Jersey Division	§§H. S. Hayward		Jersey City, N. J.
New Jersey Division	Tho. Kerr	P. S. Bogart	So. Amboy, N. J.
New Jersey Division	R. McDowell		Lambertville, N. J.
New Jersey Division	W. McAllister		Camden, N. J.
West Penn. Division	C. B. Street	M. H. Fails	Blairsville, Pa.
Peoria, Decatur & Evansville	P. Reilly		Pekin, Ill.
Peoria & Jacksonville	R. F. Hurd	R. F. Hurd	Pekin, Ill.
Peoria & Springfield	E. Deizerdt	E. Deizerdt	Peoria, Ill.
Petersburg		J. W. Fleming	Petersburg, Va.
Philadelphia, Wilmington & Balt	S. A. Hodgman	Wm. Lungren	Wilmington, Del.
Philadelphia & Atlantic City	J. W. Wright	E. Lippincott	Camden, N. J.
Philadelphia & Erie	§§Howard Fry W. F. Beardsley W. L. Forster W. L. Holman W. T. Smith		Williamsport, Pa. Sunbury, Pa. Renovo, Pa. Kane, Pa. Erie, Pa.
Philadelphia & Baltimore Central	S. D. Danfield	S. D. Danfield	Chester, Pa.
Philadelphia & Reading	*L. B. Paxson	John H. Rankin	Reading, Pa.
Catawissa Branch	W. H. Ellis	C. D. Ellis	Catawissa, Pa.
Germantown & Norris'n Div	Jackson Richards		Philadelphia, Pa.
North Penn. Division	Jackson Richards	C. W. Hammann	Philadelphia, Pa.
Del. & Bound Brook Div	Jackson Richards		Philadelphia, Pa.
Piedmont Air Line	‡R. D. Wade		Richmond, Va.
Rich. & Danville Div		J. B. Vaughan	Richmond, Va.
North Carolina Div		J. C. Holt	Comp. Shops, N. C.
Pittsburg, Cincinnati & St. Louis	§§G. W. Rhodes		Columbus, O.
Little Miami Division	J. H. Setchel	John McVay	Cincinnati, O.
Little Miami Division		M. P. Ford	Columbus, O.
Col., Cin. & Ind. Division	Robert Curtis	‖Tho. Chamberlin	Columbus, O.
Col., Cin. & Ind. Div	Geo. H. Prescott	Chas. H. Starr	Logansport, Ind.
Col. Cin. & Ind. Division	‖C. M. St. Clair		Indianapolis, Ind.
Cin. & Musk. Val. Division	Leroy Kells	‖Daniel Jewell	Lancaster, O.
Pitts. Cin. & St. Louis Divis'n	Ross Kells		Denison, O.
Pitts. Cin. & St. Douis Divis'n		‖A. K. Mansfield	Steubenvill, O.
Pittsburg, Fort Wayne & Chicago	Geo. J. Parkin	John Marquis	Allegheny, Pa.
Pittsburg, Fort Wayne & Chicago	J. M. Boon	Israel Lee	Fort Wayne, Ind.
Pittsburg, Fort Wayne & Chicago		J. J. Kirkland	Crestline, O.
Pittsburg, Titusville & Buffalo	H. J. Bookhammer	John Monks	Oil City, Pa.
Pittsburg, Virginia & Charleston	Wm. Lininger		Pittsburg, Pa.
Pittsburg & Lake Erie	S. W. Haines		Pittsburg, Pa.
Portland & Ogdensburg	Geo. H. Poor	W. G. Brewer	Portland, Me.
Portland & Rochester	E. H. C. Tompson	David Dow	Portland, Me.
Port Dover & Lake Huron	H. M. Aldrich		Woodstock, Ont.
Port Royal & Augusta	Geo. Riley	J. H. Milton	Port Royal, S. C.
Poughkeepsie, Hartford & Boston	John L. Driscoll		Poughkeepsie, N. Y.
Prince Edward Island	A. Stronach	‖D. M. Fraser	Charlottet'n, P. E. I.
Providence & Springfield	G. T. Richardson		Pascoag, R. I.
Providence & Worcester	A. Griggs	A. Griggs	Providence, R. I.
Providence, Warren & Bristol	Rufus Smith	Rufus Smith	Bristol, R. I.
Q			
Quebec, Mont., Ottawa & Occidental	†A. Davis		Montreal, Can.
Quincy, Missouri & Pacific			Kirksville, Mo.
R			
Raleigh & Augusta Air-Line	**B. R. Harding		Raleigh, N. C.
Raleigh & Gaston	**B. R. Harding	B. R. Harding	Raleigh, N. C.
Rhinebeck & Connecticut	A. W. Quackenbush	John H. Decker	Rondout, N. Y.
Rich., Fredericksburg & Potomac	H. Khun	W. H. Trainham	Richmond, Va.
Richmond & Allegheny	Geo. D. Harris		Richmond, Va.
Richmond & Danville	See Piedmont Air-Line.		
Richmond & Petersburg	John O'Brien	H. L. Carter	Richmond, Va.
Rich., York River & Chesapeake	A. B. Armstrong	A. B. Armstrong	Richmond, Va.
Rio Grande	G. W. Rendall	M. Markwood	Brownsville, Tex.
Rochester & State Line	A. J. Robbins		Rochester, N. Y.
Rock Island & Peoria	Joseph Elder		Peoria, Ill.
Rome, Watertown & Ogdensburg	Geo. H. Hazleleton	Geo. H. Hazleton	Oswego, N. Y.
Rome, Georgia	O. W. Harbin	O. W. Harbin	Rome, Ga.
S			
Saginaw Valley & St. Louis			St. Louis, Mich.
San Francisco & Northern Pacific	Ed. Reynolds	John Martin	Donahue, Cal.
Savannah, Florida & Western	§Charles Collins	P. N. Raynall	Savannah, Ga.
Savannah & Memphis	R. A. Bridges		Opelika, Ala.
Scioto Valley	C. H. Cory	C. H. Cory	Portsmouth, O.
Seaboard & Roanoke	§§M. M. Pendleton		Portsmouth, Va.
Selma, Rome & Dalton	B. J. Sitton	W. W. Pierce	Selma, Ala.
Selma, Marion & Memphis	J. M. Levis		Marion, Ala.
Sheboygan & Fond du Lac	John Hickey	John Hickey	Sheboygan, Wis.
Shenango & Allegheny	Edw. Richardson		Greenville, Pa.
Shepaug	C. M. Allen		Litchfield, Ct.
Sioux City & Pacific	C. H. Foster	C. H. Foster	Missouri Valley, Ia.
Sioux City & St. Paul	F. C. Butterfield	F. C. Butterfield	Shakopee, Minn.
Southern Pacific.			
Northern Division	J. T. Wilson	F. N. Bellisle	San Francisco, Cal.
Los Angeles & Yuma Div	Jas. Velsir	‖J. S. Young	Los Angeles, Cal.
Tulare Division	S. Johnson		Tulare, Cal.
South Carolina	§P. J. Cochrane	Geo. H. Gramling	Charleston, S. C.
Southern Central	Chas. G. Brown	H. Mooney	Auburn, N. Y.
Southeastern (Canada)	Edwin Goss		Richford, Vt.
Southwestern of Georgia	D. M. Gugel	James A. Knight	Macon, Ga.
South Pacific Coast	Martin Carter	Martin Carter	Newark, Cal.

Railroad.	*Master Mechanic.*	*Master Car-Builder.*	*Residence.*
Spartanburg, Union & Columbia	Wm. Platt	W. B. Brown	Spartanburg, S. C.
Spartanburg & Asheville	M. Fraser	W. B. Brown	Spartanburg, S. C.
Springfield, Athol & Northeastern	W. E. Granger		Springfield, Mass.
Springfield Southern	F. W. Johnstone		Springfield, O.
State Line & Sullivan	J. O. Blight		Towanda, Pa.
Stockton & Copperopolis	John M. Fulton		Stockton, Cal.
Stonington & Providence	J. H. Anderson	J. H. Anderson	Providence, R. I.
St. Croix & Penobscot	G. H. Corsen	H. C. Tincker	Milltown, Me.
St. Johns	Jas. M. Owens		St. Augustine, Fla.
St. Johnsbury & Lake Champlain	Geo. E. Howe		St. Johnsbury, Vt.
S. Joseph & Des Moines	W. D. Rowley		St. Joseph, Mo.
St. Joseph & Western	E. Sleppy	E. Sleppy	So. St. Joseph, Mo.
St. Lawrence & Ottawa	Calvin Dame	Calvin Dame	Prescott, Canada.
St. Louis, Iron Mount. & So	**O. A. Haynes	Oscar Doolittle	St. Louis, Mo.
Arkansas Division	L. Finlay	L. Finlay	Little Rock, Ark.
Missouri Division	W. H. Harris		De Soto, Mo.
St. Louis, Alton & Terre Haute	**Beriah Warren.		St. Louis, Mo.
St. Louis, Salem & Little Rock	Thomas Everson	A. W. Grosvernor	Steelville, Mo.
St. Louis & San Francisco	M. Kearney		N. Springfield, Mo.
St. Louis, Keokuk & Northwest'n	Wm. Foley		Keokuk, Iowa.
St. Louis Bridge Co. & Tunnel R.R.	H. M. Smith		St. Louis, Mo.
St. Paul & Duluth	W. McFarland	John Hill	St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	J. C. Munro	J. C. Munro	St. Paul, Minn.
St. Paul & Sioux City	F. C. Butterfield	F. C. Butterfield	Shakopee, Minn.
Sussex	E. H. Osborn.	R. L. Sutton	Newton, N. J
Syracuse, Binghamton & N. Y	James Buchanan.	James Buchanan	Syracuse, N. Y.
yracuse, Chenango & New York	Geo. W. West		Syracuse, N. Y.
T			
ennessee & Pacific	William McKeand	William McKeand	Nashville, Tenn.
T. H. & Indianapolis. Vandalia Line.	§§C. R. Peddle	E. D. Carter	Terre Haute, Ind.
Indianapolis Div.	Clinton Idler		Indianapolis, Ind
Vandalia Div.	Chas. Butler		Effingham, Ill.
Logansport Division	A. J. Prescott	H. L. Clark	Logansport, Ind.
Texas & New Orleans	E. A. Campbell		Houston, Texas.
Texas & Pacific	H. J. Small	‖F. M. Alexander	Marshall, Texas.
Tioga & Elmira State Line	Pere Bonny	D. H. Stratton	Blossburg, Pa.
Toledo, Delphos & Burlington	Geo. H. Tier		Delphos, O.
Toronto, Grey & Bruce	†David Preston		Toronto, Can.
Toronto & Nipissing	J. Haggas		Toronto, Can.
Troy & Boston	Z. B. Davis	R. V. Coon	Troy, N. Y.

Railroad.	*Master Mechanic.*	*Master Car Builder.*	*Residence.*
Ulster & Delaware	J. B. Dykeman	Jno. H. Decker	Rondout, N. Y.
U			
Union Pacific	§L. H. Congdon	‡‡Geo. E. Stevens	Omaha, Neb.
Eastern Division		‖A. M. Collett	Omaha, Neb.
Eastern Division		‖H. P. Makely	Grand Island, Neb
Mountain Division	T. A. Davis	‖John E. Davis	Cheyenne, Wg. T.
Laramie Division		‖Floyd Heavaner	Laramie, Wg. T.
Western Division		‖R. V. Brinkley	Evanston, Wg. T.
Colorado Division	James S. Scott	E. G. Thomas	Golden, Col.
Utah Central	W. B. Armstrong	Sam. S. Tucker	Salt Lake City.
Utah Western	Robert Anderson		Salt Lake City, U.
Utica & Black River	John Bailey	David James	Utica, N. Y.
Utica, Ithaca & Elmira	Geo. W. Cleveland.	F. W. Magargil	Breesport, N. Y.
V			
Valley	A. Pilsbury	Chas. Blanchard	Cleveland, O.
Vicksburg & Meridian	Jas. B. Browne		Vicksburg, Miss.
Vicksburg, Shreveport & Pacific	C. H. Tull		Monroe, La.
Virginia & Truckee	I. N. Fording		Carson, Nev.
W			
Wabash, St. Louis & Pacific	Chauncy Morris		Fort Wayne, Ind
Wabash, St. Louis & Pacific	Jacob Johann	‖B. B. Rose	Springfield, Ill.
Wabash, St. Louis & Pacific	‡W. D. Hewitt	††R. M. Hemphill	Peoria, Ill.
Wabash, St Louis & Pacific		U. H. Kohler	Toledo, Ohio.
Wallkill Valley	A. W. Quackenbush	Jno. H. Decker	Rondout, N. Y.
Wash. City, Va. Mid. & G. South	Jas. E. Waddey	J. T. Nalls	Alexandria, Va.
Washington & Ohio	Edward Dunn	John Harrison	Alexandria, Va.
Welland	James Taylor	Wm. H. Pay	St. Catharine, C. W.
Westchester & Philadelphia	John Moyer	Nathan Pawling	Philadelphia, Pa.
Western & Atlantic	John H. Flynn	W. G. Grambling	Atlanta, Ga.
Western Maryland	§David Holtz	J. H. Nussear	Union Bridge, Md.
Western North Carolina	Geo. W. Gates.		Salisbury, N. C.
Western, of Alabama	Robert King	F. M. Wade	Montgomery, Ala.
Western R. R. N. C.	Isaac W. Clark	Isaac W. Clark	Fayetteville, N. C
Western Union	John Taylor	E. A. Eddy	Racine, Wis.
West Feliciana	J. A. Tilton	Wm. McKelvey	Laurel Hill, La.
West Jersey	W. McAllister	C. C. Williams	Camden, N. J.
White Water	§L. W. Wingert		Harrison, O.
Wilmington, Columbia & Augusta	John Bisset	W. H. Day	Florence, S. C.
Wilmington & Welden	John Bisset	C. R. Clowe	Wilmington, N. C.
Wisconsin Central	A. Tenwick	J. L. Adam	Stevens' P't, Wis.
Wisconsin Valley	M. B. Snyder		Tomah, Wis.
Worcester & Nashua	John G. Brady	John G. Brady	Worcester, Mass.

Directory of Railway Superintendents and Purchasing Agents

THROUGHOUT THE UNITED STATES AND CANADA.

REFERENCES.—* General Manager. † Managing Director. ‡ Assistant General Superintendent. § Assistant Superintendent. ** Superintendent of Transportation. §§ Assistant General Manager.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
A			
Adirondack	C. E. Durkee		Saratoga, N. Y.
Alabama Central	John M. Bridges		Selma, Ala.
Alabama Great Southern	Chas. P. Ball	R. W. Healey	Chattanooga, Tenn.
Albany & Susquehanna	*C. F. Young		Honesdale, Pa.
Alleghany Valley	David McCargo	David McCargo	Pittsburg, Pa.
Anderson, Lebanon & St Louis	Jas. A. Larnerd		Anderson, Ind.
Arkansas Midland	*A. H. Johnson		Helena, Ark.
Ashtabula & Pittsburg	D. B. McCoy		Ashtabula, O.
Atchison, Topeka & Santa Fe	*W. B. Strong	F. M. Smith	Topeka, Kan.
Southern Division	A. A. Robinson		Las Vegas, N. M.
Eastern Division	D. J. Chase		Topeka, Kan.
Atlanta & Charlotte Air Line	*G. J. Foreacre	G. J. Foreacre	Atlanta, Ga.
Atlanta & West Point	*L. P. Grant		Atlanta, Ga.
Atlantic & North Carolina	A. B. Andrews		Newbern, N. C.
Atlantic, Mississippi & Ohio	Geo. Hoffman	J. P. Minetree	Petersburg, Va.
Atlantic, Tennessee & Ohio	J. J. Gormley		Charlotte, N. C.
B			
Baltimore & Ohio	**W. M. Clements.	N. S. Hill.	Baltimore, Md.
Ohio & Chicago Division	C. H. Hudson		Chicago, Ill.
Pittsburg Division	G. M. Serpell		Connellsville, Pa.
Baltimore & Potomac	Geo. C. Wilkins	A. W. Sumner	Baltimore, Md.
Bangor & Piscataquis	Arthur Brown		Bangor, Me.
Bath & Hammondsport	M. H. Hall		Hamm'dsp't, N. Y.
Bedford, Sp'gville, Owensb'g & Bd.	Jas. W. Kennedy.	Jas. W. Kennedy	Bedford, Ind.
Bellefonte & Snow Shoe	Daniel Rhoads		Bellefonte, Pa.
Bell's Gap	Robert G. Ford		Bellwood, Pa.
Bennington & Rutland	F. C. White	F. C. White	Rutland, Vt.
Blairstown	J. D. Vail		Blairstown, N. J.
Boston, Revere Beach & Lynn	E. H. Whorf		Boston, Mass.
Boston & Albany	*Wm. Bliss		Boston, Mass.
Boston & Albany	C. O. Russell		Springfield, Mass.
Boston & New York Air Line	Jos. H. Franklin		New Haven, Conn.
Boston & Providence	A. A. Folsom	A. A. Folsom	Boston, Mass.
Boston Concord & Montreal	*J. A. Dodge		Plymouth, N. H.
Boston, Concord & Montreal	§W. A. Stowell	J. Thomas Vose	Boston, Mass.
Boston, Hoosac Tunnel & Western.	E. B. Burnham		Mechanicsville, N. Y.
Boston & Maine	J. T. Furber	M. E. Wood	Boston, Mass.
Boston & Lowell	A. A. Hobart	F. H. Nourse	Boston, Mass.
Boston, Barre & Gardner	H. M. Witter	H. M. Witter	Worcester, Mass.
Brooklyn, Flatbush & Coney Isl'd.	W. E. Dorwin		Brooklyn, N. Y.
Brunswick & Albany	R. D. Meader		Brunswick, Ga.
Burlington & Mo. River (in Neb.)	*A. E. Touzalin.	G. Hargreaves	Omaha, Neb.
Burlington & Mo. River (in Neb.)	Geo. W. Holdrege		Lincoln, Neb.
First Division	J. O. Phillipi		Lincoln, Neb.
Burlington, Cedar Rapids & Nor'n.	C. J. Ives	Rob't Williams	Cedar Rapids, Ia.
Burlington & Northwestern	John F. Gerry	John F. Gerry	Burlington, Ia.
Burlington & Southwestern	J. W. Smith	J. W. Smith	Burlington, Ia.
Buffalo & Southwestern	*John F. Moulton		Buffalo, N. Y.
Buffalo, New York & Philadelphia.	Geo. S. Gatchell	J. H. Pool	Buffalo, N. Y.
C			
Cairo & St. Louis	*L. M. Johnson	L. M. Johnson	St. Louis, Mo.
Cairo & Vincennes	Roswell Miller	T. W. Fitch	Cairo, Ill.
California Pacific & Northern	§J. A. Fillmore		Sacramento, Cal.
Camden & Atlantic	F. A. Lister	F. A. Lister	Camden, N. J.
Canada Central	*Archer Baker		Brockville, Can.
Canada Southern	*Wm. P. Taylor	A. F. Howland	St. Thomas, Ont.
U. S. Division	E. P. Murray		Toledo, O.
Canada Division	W. E. Carroll		St. Thomas, Ont.
Canadian Pacific	J. F. Lynskey		Winnepeg, Man.
Carbondale & Shawneetown	R. J. Cavett		Carbondale, Ill.
Carolina Central	V. Q. Johnson	C. H. Roberts	Wilmington, N. C.
Catasauqua & Fogelsville	C. W. Chapman	C. W. Chapman	Catasauqua, Pa.
Cayuga Southern	W. Stevenson		Sayre, Pa.
Cayuga & Susquehanna	W. R. Humphreys		Ithaca, N. Y.
Cazenovia, Canastota & De Ruyter.	John Stebbins		Cazenovia, N. Y.
Central Pacific	*A. N. Towne		San Francisco, Cal.
Central Pacific	J. A. Fillmore		San Francisco, Cal.
Central Pacific		J. R. Watson	Sacramento, Cal.
Western & Visalia Divisions	A. D. Wilder		Oakland, Cal.
Truckee Division	Frank Free		Wadsworth, Nev.
Humboldt Division	G. W. Coddington		Carlin, Nev.
Salt Lake Division	A. G. Fell		Ogden, Utah.
Sacramento & Oregon Div	R. H. Pratt		Sacramento, Cal.
Central Vermont	J. W. Hobart		St. Albans, Vt.
Central Vermont	‡J. M. Foss		St. Albans, Vt.
Western Division	John Schrier		Ogdensburg, N. Y.
Central & Southern Division			St. Albans, Vt.
Rutland Division	J. Burdett		Rutland, Vt.
New London Northern	G. W. Bentley	G. W. Bentley	New London, Conn.
Central of Georgia	Wm. Rogers	Henry Yonge	Savannah, Ga.
Atlanta Division	W. F. Shellman		Macon, Ga.
Central of Iowa	D. N. Pickering	D. N. Pickering	Marshalltown, Ia.
Central of New Jersey	James Moore	B. W. Burnet	Elizabeth, N. J.
Central Division	W. W. Stearns		Elizabeth, N. J.
Lehigh & Susq. Division	W. S. Polhemus		Mauch Chunk, Pa.
Champaign, Havana & Western	A. H. Wood		Urbana, Ill.
Charleston & Savannah	C. S. Gadsden		Charleston, S. C.
Charlotte, Columbia & Augusta	Jno. G. Clarke		Columbia, S. C.
Chesapeake & Ohio	W. M. S. Dunn	J. A. Netherland	Richmond, Va.
Cheraw & Darlington	J. F. Divine		Society Hill, S. C.
Cherokee	John Postell		Atlanta, Ga.
Cheshire	R. Stewart	H. H. Stone	Keene, N. H.
Chester & Lenoir	James Mason		Chester, S. C.
Chicago & Northwestern	*Marvin Hughitt	R. W. Hamer	Chicago, Ill.
Chicago & Northwestern	J. S. Oliver		Chicago, Ill.
Chicago & Northwestern	§Chas. C. Wheeler		Chicago, Ill.
Wisconsin & Mill. Division	E. J. Cuyler		Chicago, Ill.
Peninsula Division	W. B. Lindsay		Escanaba, Mich
Madison Division	C. A. Swineford		Baraboo, Wis.
Galena Division	Chas. Murray		Chicago, Ill.
Des Moines & Iowa Division	J. M. Whitman		Clinton, Iowa.
Winona & St. Peter Division	S. Sanborn		Winona, Minn.
Galena & Wisconsin Br	J. B. Trull		Galena, Ill.
Chicago & Alton	J. C. McMullen	A. V. Hartwell	Chicago, Ill.
Chicago & Alton	‡C. H. Chappell		Bloomington, Ill.
Chicago Division	A. M. Richards		Chicago, Ill.
Kansas City St. Louis Div	O. Vaughan		Mexico, Mo.
Chicago & Block Coal	*A. F. Beach		Veedersburg, Ind.
Chicago, Burlington & Quincy	*Thos. J. Potter	Wm. Irving	Chicago, Ill.
Chicago, Burlington & Quincy	§John D. Besler		Galesburg, Ill.
Chicago, Burlington & Quincy	§E. Ryder		Chicago, Ill.
Middle, Galesb'g & Q'y Div	H. Hitchcock		Galesburg, Ill.
St. Louis & R. Isl'd Division	W. R. Crumpton		St. Louis Mo.
Iowa Division	W. C. Perkins		Burlington, Iowa
Chi., Clinton, Dubuque & Minn	*F. O. Wyatt	F. O. Wyatt	Dubuque, Iowa.
Chicago & Eastern Illinois	O. S. Lyford	O. S. Lyford	Chicago, Ill.
Chicago & Iowa	W. H. Holcomb, *Rec*		Rochelle, Ill.
Chicago & Northeastern	J. M. Turner		Lansing, Mich.
Chicago & Pacific	*J. M. Whitman	James Penny	Chicago, Ill.
Chicago & Paducah	D. H. Conklin		Streator, Ill.
Chicago & Paducah		C. L. Rising	Chicago, Ill.
Chicago, St Louis & New Orleans.	*J. C. Clarke	J. C. Febiger, Jr	New Orleans, La.
South Division	W. P. McKinley		McComb City, Miss.
North Division	J. G. Mann		Jackson, Tenn.
Chicago, Rock Island & Pacific	A. Kimball		Davenport, Iowa.
Chicago, Rock Island & Pacific	‡A. Manvel.	A. Manvel	Chicago, Ill.
Southwestern Division	G. F. Walker		Trenton, Mo.
Iowa Division	H. F. Royce		Des Moines, Iowa
Keokuk & Des Moines Div	John Givin		Keokuk, Ia.
Chicago & West Michigan	§C. M. Lawler		St. Joseph, Mich.
Chicago, Milwaukee & St. Paul	W. C. Van Horne.	J. T. Crocker	Milwaukee, Wis.
Ch., LaCrosse & P. du C. Div.	H. C. Atkins		Milwaukee, Wis.
Northern Division	L. B. Rock		Milwaukee, Wis.
I. & M., & I. D. Division	C. H. Prior		Minneapolis, Minn.
Wabasha Division	J. H. Lakey		Wabasha, Minn.
Western Union Division	D. A. Olin		Racine, Wis.
Sioux City & Dak. Div	G. E. Merchant		Sioux City, Ia.
Southern Minnesota Div	J. M. Egan	J. M. Egan.	La Crosse, Wis
Chicago, Pekin & Southwestern	A. H. Cook	A. H. Cook	Chicago, Ill.
Chicago, St. Paul & Minneapolis	E. W. Winter	W. H. S. Wright	St. Paul, Minn.
Chicago & Grand Trunk	Henry Funnell		Battle Creek, Mich.
Chicago & Grand Trunk		N. Wall	Port Huron, Mich.
Chippewa Falls & Western	L. C. Stanley		Chip'wa F'lls, Wis.
Cincinnati & Eastern	George H. Wilber		Batavia, O.
Cincinnati, Wabash & Michigan	*Norman Beckley	Norman Beckley	Elkhart, Ind.
Cincinnati, Richmond & Chicago	*Lewis Williams		Cincinnati, O.
Cincinnati, Rockp't & Southwest'n.	H. C. Branham	H. C. Branham	Rockport, Ind.
Cincinnati & Terre Haute	John Holland		Terre Haute, Ind.
Cin., Cumber'd Gap & Charleston	W. J. Taylor		Knoxville, Tenn.
Cincinnati, Hamilton & Dayton	*Lewis Williams	Lewis Williams	Cincinnati, O.
Cin., Hamilton & Indianapolis	Lewis Williams		Cincinnati, O.
Cin., Sandusky & Cleveland	*D. W. C. Brown	Frank Herriman	Sandusky, O.
Cincinnati Southern	Sam'l Woodward	Julius Uihlein	Cincinnati, O.
Cin., Indianapolis, St. Louis & Chi	J. W. Sherwood		Indianapolis, Ind
Cin., Indianapolis, St. Louis & Chi		George Tozzer	Cincinnati, O.
Cleve., Col., Cin. & Indianapolis	*E. B. Thomas	J. L. Yale	Cleveland, O.
Indianapolis Division	C. C. Gale		Indianapolis, Ind
Col. and Cincinnati Divs	Robert Blee		Cleveland, O.
Cleveland & Marietta	S. C. Baldwin	R. B. Hoover	Marietta, Ohio.

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Cleveland & Pittsburg	John Thomas		Cleveland, O.
Cleveland & Pittsburg	*J. D. Layng	Wm. Mullins	Pittsburg, Pa.
Cleveland, Mt. Vernon & Columb's.	G. A. Jones		Mt. Vernon, O.
Cleve., Tuscarawas Val. & Wheel.	*Oscar Townsend		Cleveland, O.
Cobourg, Petersboro & Marmora	James R. Barber	J. R. Barber	Cobourg, Ont.
Columbus & Hocking Valley	Orland Smith		Columbus, O.
Columbus & Toledo	Orland Smith	Geo. R. Carr	Columbus, O.
Columbus & Rome	T. J. Nuckolls		Columbus, Ga.
Concord & Claremont	George E. Todd		Concord, N. H.
Concord	H. E. Chamberlin	H. E. Chamberlin	Concord, N. H.
Concord & Portsmouth	H. E. Chamberlin		Concord, N. H.
Connecticut Central	D. D. Warren, Pres		Springfield, Mass.
Connecticut River	John Mulligan	John Mulligan	Springfield, Mass.
Connecticut Valley	Samuel Babcock		Hartford, Conn.
Connecticut Western	J. F. Jones		Hartford, Conn.
Connecticut & Passumpsic Rivers.	H. E. Folsom		Lyndonville, Vt.
Corning, Cowanesque & Antrim	A. H. Gorton	Andrew Beers	Corning, N. Y.
Covington, Col. & Black Hills	J. I. Booge		Sioux City, Iowa.
Cumberland Valley	J. F. Boyd	O. N. Lull	Chambersburg, Pa.
Cumberland & Pennsylvania	P. L. Burwell	P. L. Burwell	Cumberland, Md.
Cumberland & Maurice River	L. H. Dowdney		Port Norris, N. J.

D

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Danbury & Norwalk	L. W. Sandiforth		South Norwalk, C.
Danville & Southwestern	James A. Eads		Paris, Ill.
Davenport & Northwestern	D. Flanigan		Davenport, Ill.
Dayton & Michigan	E. E. Dwight		Dayton, O.
Dayton & Union	C. C. Gale		Indianapolis, Ind.
Dayton & Southeastern	J. E. Gimperling, *Rec*	E. F. Pryor	Dayton, O.
Delaware & Chesapeake	O. S. Sanford		Easton, Md.
Delaware & Hudson Canal Co	R. Manville	J. White Sprong	Albany, N. Y.
Delaware & Hudson Canal Co	*C. F. Young		Honesdale, Pa.
Albany & Susq. Division	C. D. Hammond		Albany, N. Y.
Rensselaer & Saratoga Div	Theo. Voorhees		Troy, N. Y.
Delaware, Lackawanna & Western		G. W. B. Cushing	New York City.
Delaware, Lackawanna & Western	W. F. Hallstead		Scranton, Pa.
Bloomsburg Division	G. Bogart		Scranton, Pa.
Morris & Essex Division	Andrew Reasoner		Hoboken, N. J.
Oswego & Syracuse Division	W. B. Phelps		Oswego, N. Y.
Utica, Chenango & Sus. Div	W. G. Oakman		Scranton, Pa.
Delaware Western	David Connell		Wilmington, Del.
Denver & Rio Grande	*D. C. Dodge		Denver, Col.
Denver & Rio Grande		A. B. Garner	Colorado Spr's, Col.
Denver, South Park & Pacific	C. W. Fisher	Charles Wheeler	Denver, Col.
Des Moines, Northwestern	C. N. Gilmore		Adel, Iowa.
Des Moines & Ft. Dodge	C. N. Gilmore	C. N. Gilmore	Des Moines, Ill.
Detroit & Bay City	S. R. Callaway	Allan Bourn	Detroit, Mich.
Detroit, Gr. Haven & Milwaukee	W. J. Morgan	John S. Lorimer	Detroit, Mich.
Detroit, Hillsdale & Southwestern	W. F. Parker		Ypsilanti, Mich.
Detroit, Lansing & Northern	J. B. Mulliken	Allan Bourn	Detroit, Mich.
Dorchester & Delaware	Tho. E. Wright		Cambridge, Md.
Dunkirk, Allegheny Val. & Pitts	D. Thayer		Dunkirk, N. Y.
Dunkirk, Allegheny Val. & Pitts		R. C. Moore	New York City.

E

Railroad.	Superintendent.	Purchasing Agent.	Residence.
East Broad Top	A. W. Sims		Orbisonia, Pa.
East Alabama	W. W. Barnes		Opelika, Ala.
East Line & Red River	W. B. Ward		Jefferson, Tex.
East Tenn., Virginia & Georgia	**J. F. O'Brien	J. F. O'Brien	Knoxville, Tenn.
Eastern	**D. W. Sanborn	Geo. J. Fisher	Boston, Mass.
Eastern Kentucky	H. W. Bates	H. W. Bates	Riverton, Ky.
Eastern Kentucky	Geo. Noble		Riverton, Ky.
Eastern Shore	W. Thompson		Prince Anne, Md.
Erie & Pittsburg	J. M. Kimball		Erie, Pa.
Erie & Pittsburg	*J. D. Layng	Wm. Mullins	Pittsburg, Pa.
Eureka & Palisade	P. Evarts		Palisade, Nev.
European & North American	F. W. Cram		Bangor, Maine.
Evansville & Terre Haute	J. E. Martin	Jno. L. White	Evansville, Ind.
Evansville, Terre Haute & Chi	Jos. Collett	W. D. Macfarland	Terra Haute, Ind.

F

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Fitchburg	John Adams	F. S. Pratt	Boston, Mass.
Vermont & Mass. Div	‡E. K. Turner		Fitchburg, Mass
Flint & Pere Marquette	Sanford Keeler	G. G. Cook	E Saginaw, Mich.
Florida Central	W. M. Davidson	W. M. Davidson	Jacksonville, Fla.
Flushing, North Shore & Central	Samuel Spencer	Samuel Spencer	L'g Isl'd C'y, N. Y.
Fonda, Johnstown & Gloversville	L. Caten		Gloversville, N. Y.
Fon du Lac, Amboy & Peoria	A. Kinyon		Fond du Lac, Wis.
Fort Madison & Northwestern	S. B. Kenrick	S. B. Kenrick	Fort Madison, Ia
Fort Wayne & Jackson	M. D. Woodford	M. D. Woodford	Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	W. W. Worthington & P. Ag't.		Fort Wayne, Ind.
Foxburg, St. Petersburg & Clarion	Benj. B. Newton		Foxburg, Pa.
Frankfort & Kokomo	J. B. Clark	E. H. Andress	Lafayette, Ind.
Fredericton	F. B. Edgecombe		Fredericton, N. B.
Freehold & New York	J. E. Ralph		Freehold, N. J.

G

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Gal., Harrisburg & San Antonio	James Converse		Houston, Texas.
Gal., Houston & Henderson	*W. H. Harding	W. H. Harding	Palestine, Texas.
Geneva, Ithaca & Sayre	Wm. Stevenson		Sayre, Pa.
Georgia	S. K. Johnson	S. K. Johnson	Augusta, Ga.
Grand Haven	*F. H. May	F. H. May	Allegan, Mich.
G. Rapids, Newaygo & L. Shore	C. Warner		G. Rapids, Mich.
Grand Rapids & Indiana	W. O. Hughart, Pres't	W. R. Shelby	G. Rapids, Mich.
Northern Division	J. M. Matheany		G. Rapids, Mich.
Southern Division	P. S. O'Rourke		Fort Wayne, Ind.
Grand Trunk	*J. Hickson	John Taylor	Montreal, Canada.
Grand Trunk	W. J. Spicer		Montreal, Canada.
Grand Tower & Carbondale	T. M. Williamson	Wm. W. Harris	Grand Tower, Ill.
Grayville & Mattoon	*G. L. Bradbury		Mattoon, Ill.
Grayville & Mattoon	G. R. Cobleigh		Mattoon, Ill.
Great Western (Canada)	Charles Stiff		Hamilton, Ont.
Great Western (Canada)		G. R. Nash	London, Ont.
Green Bay & Minnesota	*Timothy Case		Green Bay, Wis.
Greenville & Columbia	J. W. Fry		Columbia, S. C.
Greenville, Col. & Birmingham	E. P. Buell		Greenville, Miss.
Greenwich & Johnsonville	H. H. Warner		Greenwich, N. Y.
Gulf, Colorado & Santa Fé	*John Sealey		Galveston, Texas.
Gulf, Western Texas & Pacific	M. D. Monserrate		Cuero, Texas.

H

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Hamilton & Northwestern	*F. W. Cumberland		Hamilton, Ont.
Hannibal & St. Joseph	W. R. Woodard	T. L. Dunn	Hannibal, Mo.
Eastern Division	W. R. Woodard		Hannibal, Mo.
Western Division	W. C. Alberger		Kansas City, Mo.
Hanover Junction & Gettysburg	Henry A. Young		Hanover, Pa.
Harlem Extension South	*R. C. Root		Bennington, Vt.
Havana, Rantoul & Eastern	H. E. Bullock	H. E. Bullock	Rantoul, Ill.
Housatonic	L. B. Stillson	D. L. Draper	Bridgeport, Conn.
Houston, East & West Texas			Houston, Texas.
Houston & Texas Central	A. H. Swanson	A. H. Swanson	Houston, Texas.
Southern Division	M. G. Howe		Houston, Texas
Northern Division	G. A. Quinlan		Corsicana, Texas.
Huntingdon & Broad Top	Geo. F. Gage	S. B. Knight	Huntingdon, Pa.

I

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Illinois Central	E. T. Jeffrey	O. Ott	Chicago, Ill.
Chicago Division	C. A. Beck		Centralia, Ill.
Northern Division	J. C. Jacobs		Amboy, Ill.
Iowa Division	D. W. Parker		Dubuque, Ia.
Springfield Division	T. J. Hudson		Springfield, Ill.
Illinois Midland	L. Genis, *Rec.*	J. G. Clifford	Terre Haute, Ind.
Illinois & St. Louis	C. H. Sharman		St. Louis, Mo.
Indiana, Bloomington & Western	§§C. E. Henderson	H. C. Norton	Indianapolis, Ind.
Indianapolis, Decatur & Spring.	E. H. Goodrich		Indianapolis, Ind.
Indianapolis & St. Louis	E. B. McClure	H. W. Comstock	Indianapolis, Ind.
Indianapolis, Peru & Chicago	§§E. C. Murphy		Indianapolis, Ind.
Indianapolis, Peru & Chicago		John Mc Kenna	Peru, Ind.
Indianapolis & Vincennes	J. J. Turner		Indianapolis, Ind
Intercolonial	D. Pottinger	T. V. Cooke	Moncton, N. B.
Halifax & St. John Division	Jas. Coleman		Truro, N. S.
Northern Division	M. Busby		Campbellt'n, N. B.
International & Great Northern	*H. M. Hoxie	H. M. Hoxie	Galveston, Texas.
Iowa Eastern	H. H. Kerr		Beulah, Iowa.

J

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Jacksonville, N. Western & S. E.	E. S. Greenleaf		Jacksonville, Ill.
Jacksonville, Pen. & Mobile		J. D. Hollister	Tallahassee, Fla.
Jeff., Madison & Indianapolis	E. W. McKenna		Louisville, Ky.
Jeff., Madison & Indianapolis		Wm. Mullins	Pittsburg, Pa.
Junction & Breakwater	Tho. Groome		Lewes, Del.

K

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Kansas Central	W. A. Martin	W. A. Martin	Leavenworth, Kan.
Kan. City, Burlington & Santa Fe	James Houston		Burlington, Kan.
Kansas City, Fort Scott & Gulf	L. W. Towne	Geo H. Nettleton	Kansas City, Mo.
Kansas City, Lawrence & South	L. W. Towne	Geo. H. Nettleton	Kansas City, Mo.
Kan. City, St. Joseph & C. Bluffs	J. F. Barnard		St. Joseph, Mo.
Kansas Pacific	*S. H. H. Clark	A. D. Clark	Omaha, Neb.
Kansas Pacific	S. T. Smith		Kansas City, Mo.
Kaw Valley Division	J. O. Brinkerhoff		Kansas City, Mo.
Smoky Hill Division	J. T. Odell		Ellis, Kansas.
Denver Division	J. T. Odell		Denver, Col.
Cheyenne Division	A. A. Egbert		Denver, Col.
Kent Co. & Smyrna & Del. Bay	J. F. Bingham		Chestertown, Md.
Kentucky Central	J. R. Ledyard		Covington, Ky.
Kingston & Pembroke	B. W. Folger	Wm. Harty	Kingston, Can.
Knox & Lincoln	C. A. Coombs	C. A. Coombs	Bath, Maine.
Knoxville & Ohio	G. J. Kinzel		Knoxville Tenn.

L

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Lake Erie & Western	*E. H. Waldron	E. H. Andress	Lafayette, Ind.
Sandusky Division	D. S. Hill		Fremont, Ohio.
Bloomington Division	M. Clark		Lafayette, Ind.
Lake Ontario Southern	*Jas. E. Briggs		Newark, N. Y.
Lake Shore & Mich. Southern	*John Newell		Cleveland, Onio.
Lake Shore & Mich. Southern	Charles Paine	A. C. Armstrong	Cleveland, Ohio.
Buffalo & Erie Division	C. B. Couch		Clevelahd, Ohio.
Toledo Division	Thos. Flesher, Jr		Cleveland, Ohio.
Michigan Division	J. E. Curtis		Toledo, Ohio.
Detroit Division	T. J. Charlesworth		Detroit, Mich.
Western Division	J. H. Parsons		Chicago, Ill.
Lansing Division			Lansing, Mich.
Franklin Division	Geo. H. McIntire		Stoneboro, Pa.
Lehigh Valley	Robert H. Sayre		Bethlehem, Pa.
Lehigh Valley		L. Chamberlin	Philadelphia, Pa.
Beaver Meadow Division	A. G. Brodhead, Jr		Mauch Chunk, Pa
Mahanoy Division	James I. Blakslee		Mauch Chunk, Pa.
New Jersey Division	H. E. Packer		Metuchen, N. J.
Wyoming Division	A. Mitchell		Wilkesbarre, Pa.
Levis & Kennebec	W. C. Hall		Quebec, Can.
Ligonier Valley	Thos. A. Mellon		East Liberty, Pa.
Little Rock & Fort Smith	T. Hartman		Little Rock, Ark.
Little Rock, Miss. River & Texas	J. A. Woodson	J. A. Woodson	Pine Bluff, Ark.
Los Angeles & Independence	§W. J. L. Moulton		Los Angeles, Cal.
Long Island	T. R. Sharp, Rec	R. M. Galloway	L'g Isla'd C'y, N. Y.
Louisiana Western	G. W. Polk		Lake Charles, La.
Louisville & Nashville	*F. de Funiak		Louisville, Ky.
Louisville & Nashville	D. W. C. Rowland	G. C. Breed	Louisville, Ky.
St. L. & S. E. & N. & D. Div.	James Montgomery		St. Louis, Mo.
Memphis Line	J. T. Harrahon		Memphis, Tenn.
Nashville & Decatur Div	James Geddes		Nashville, Tenn.
So. & North Ala. Division	B. Dunham		Birmingham, Ala.
Louisville, Cincinnati & Lexington	Wm. Mahl	Wm. Mahl	Louisville, Ky.
Louisville, New Albany & Chicago	M. Morris	Wm. M. Lewis	Louisville, Ky.
Louisville, N. Albany & St. Louis	H. L. Shepherd		New Albany, Ind.

M

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Macon & Brunswick	Jas. M. Edwards	W. C. Jones	Macon, Ga.
Maine Central	Payson Tucker		Portland, Me.
Manchester & Lawrence	H. E. Chamberlin		Concord, N. H.
Manchester & North Weare	H. E. Chamberlin		Concord, N. H.
Manhattan Beach	A. Corbin, *Pres't*		New York, N. Y.
Manhattan Elevated	§§Frank K. Hain		New York, N. Y.
Eastern Division	Robert Stewart		New York, N. Y.
Western Division	T. T. Onderdonk		New York, N. Y.
Marietta & Cincinnati	Jas. H. Stewart	J. H. Stewart	Cincinnati, O.
Marquette, Hought'n & Ontonag'n	*Samuel Schoch		Marquette, Mich.
McKean & Buffalo	S. V. Godden		Smethport, Pa.
Memphis & Little Rock	*Jas. Harrington		Memphis, Tenn.
Memphis & Little Rock	E. K. Sibley		Memphis, Tenn.
Memphis & Charleston	John A. Grant	John A. Grant	Huntsville, Ala.
Memphis, Paducah & Northern	*N. Monsarrat	N. Monserrat	Paducah, Ky.
Michigan Air Line	*M. S. Hadley		Romeo, Mich.
Michigan Central	*H. B. Ledyard	Allan Bourn	Detroit, Mich.
Michigan Central	‡E. C. Brown		Jackson, Mich.
Mackinaw & Saginaw Div	W. A. Vaughan		Bay City, Mich.
Main L'e & G. R. & Kal. Div's	C. B. Bush		Jackson, Mich.
Middleburg & Schoharie	P. S. Demforth		Middleburg, N. Y.
Middletown & Crawford	D. Thompson		[Thompson, Ridge, N. Y
Midland of New Jersey	*H. M. Britton		Jersey City, N. J.
Midland Railway of Canada	H. G. Taylor		Port Hope, Ont.
Milwaukee, Lake Shore & West'n	H. G. H. Reed		Milwaukee, Wis.
Mineral Point	G. W. Cobb	G. W. Cobb	Mineral Point, Wis.
Mineral Range	*C. E. Holland		Hancock, Mich.
Minneapolis & St. Louis	*Chas. F. Hatch	Chas. F. Hatch	Minneapolis, Minn
Minnesota Midland	J. H. Lakey		Wabasha, Minn.
Mississippi & Tennessee	M. Burke	M. Burke	Memphis, Tenn.
Missouri, Kansas & Texas	*Abram Mitchell	G. M. Babcock	Sedalia, Mo.
Sedalia, Ft. S., & Neosho Div.	L. Pearson		Sedalia, Mo.
Cherokee & Choctaw Div	E. Harding		Denison, Tex.
Missouri Division	Geo. H. Huntington		Hannibal, Mo.
Fort Scott Division	L. Pearson		Sedalia, Mo.
Missouri Pacific	A. A. Talmage	R. B. Lyle	St. Louis, Mo.
Missouri Pacific	§A. W. Dickinson		St. Louis, Mo.
Eastern Division	Miller Bullard		St. Louis, Mo.
Central Branch Division	W. W. Fagan		St. Louis, Mo.
Western Division	Warder Cumming		Sedalia, Mo.
Mobile & Alabama Grand Trunk	F. B. Clark, Prest		Mobile, Ala.
Mobile & Ohio	*A. L. Rives	A. L. Rives	Mobile, Ala.
Northern Division	E. S. Hosford		Jackson, Tenn.
Southern Division	C. Fleming		Mobile, Ala.
Mobile & Girard	W. L. Clark		Columbus, Ga.
Mobile & Montgomery	B. Dunham		Montgomery, Ala.
Mont Alto	G. B. Weistling		Mont Alto, Pa.
Montgomery & Eufaula	W. G. Raoul		Macon, Ga.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Montpelier & Wells River	W. A. Stowell		Montpelier, Vt.
Montrose	J. I. Blakslee	J. I. Blakeslee	Mauch Chunk, Pa
Morgan's Louisiana & Texas	Geo. Pandeley	C. A. Whitney & Co.	New Orleans, La.
Muncy Creek	H. R. Mehrling		Hughesville, Pa.

N

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Nashua, Acton & Boston	H. E. Chamberlin		Concord, N. H
Nashua & Lowell	Chas. E. Paige	Chas. E. Paige	Nashua, N. H.
Nashville, Chattanooga & St. Louis	J. C. Wrenne		Nashville, Tenn.
Natchez, Jackson & Columbus	J. H. Fitzpatrick		Natchez, Miss.
Naugatuck	Geo. W. Beach	Geo. W. Beach	Waterbury, Conn.
Nebraska	Wm. Irving		Omaha, Neb.
Nevada Central	*Jos. Collett		Battle Mountain, Nev.
Newburg, Dutchess & Connecticut	C. L. Kimball	C. L. Kimball	Dutchess J'n, N. Y.
New Brunswick & Canada	John Stewart		St. Stephen, N. B.
New Brunswick	E. B. Burpee	T. Burpee	Gibson, N. B.
New Canaan	Wm. St. John		New Canaan, Conn.
New Castle & Franklin	A. Vandivort		New Castle, Pa.
New Haven & Derby	E. S. Quintard		New Haven, Conn.
New Haven & Northampton	C. N. Yeamans	C. N. Yeamans	New Haven, Conn.
New Jersey & New York	J. D. Hasbrouck		Jersey City, N. J.
New Jersey Southern	Rufus Blodgett		119 Lib. st., N. Y.
New Orleans & Selma	T. H. Du Puy		Selma, Ala.
New Orleans, Texas & Mobile	D. B. Robinson	John J. Howell	New Orleans, La.
New York, Lake Erie & Western	*Robert Harris		New York, N. Y.
New York, Lake Erie & Western	E. S. Bowen	J. A. Hardenbergh	New York, N. Y.
New York, Lake Erie & Western	‡O. Chanute		New York, N. Y.
New York, Lake Erie & Western	**P. P. Wright		Jersey City, N. J.
Eastern Division	E. O. Hill		Port Jervis, N. Y.
Delaware Division	Benj. Thomas		Port Jervis, N. Y.
Susquehanna Division	R. B. Cable		Elmira, N. Y.
Buffalo & Rochester Div	R. G. Taylor		Buffalo, N. Y.
Western Division	J. S. Beggs		Dunkirk, N. Y.
New York & Greenwood Lake	Wm. P. Harris		Jersey City, N. J.
New York, New Haven & Hartford	*E. M. Reed	R. N. Dowd	New Haven, Conn.
N. Y. & N. H. Division	John T. Moody		New York, N. Y.
Hartford Division	C. S. Davidson		Hartford, Conn.
Shore Line Division	W. H. Stevenson		New Haven, Conn.
New York Central & Hudson Riv			
Hudson River & Harlem Div	J. M. Toucey	R. C. Moore	New York, N. Y.
Eastern Division	Zenas C. Priest		Utica, N. Y.
Western Division	Geo. H. Burrows		Rochester, N. Y.
New York Central Division	Jas. Tillinghast		Albany, N. Y.
New York & Harlem	Chas. M. Bissell	R. C. Moore	New York, N. Y.
New York & New England	*Jas. H. Wilson	W. W. McKim	Boston, Mass.
Eastern Division	O. M. Shepard		Boston, Mass.
Norwich Division	P. St. M. Andrews		Norwich, Conn.
Western Division	J. T. McManus		Hartford, Conn.
New York, Ontario & Western	*Theo. Houston		New York, N. Y.
New York, Ontario & Western	N. R. Hankin	Charles Clark	Middletown, N. Y.
Northern Division	C. W. Lanpher		Norwich, N. Y.
Southern Division	A. H. Danforth		Middletown, N. Y.
New York, Penn. & Ohio	P. D. Cooper	J. H. Holway	Cleveland, O.
First & Second Divisions	A. L. Dunbar		Meadville, Pa.
Third and Fourth Divisions	T. A. Phillips		Galion, O.
Mahoning Division	J. M. Ferris		Cleveland, O.
Northern Pacific	*H. E. Sargent	E. T. Williams	St. Paul, Minn.
Northern Pacific	H. A. Towne		Brainerd, Minn.
Pacific & P. Oreille Div	J. W. Sprague	J. W. Sprague	New Tacoma, W. T.
Missouri Division	D. R. Taylor		Mandon, Dak.
Northern of Canada	*F. W. Cumberland		Toronto, Can.
North Carolina	See Piedmont Air-Line.		
Northern Central	*Frank Thomson		Philadelphia, Pa.
Northern Central		A. W. Sumner	Baltimore, Md.
Baltimore Division	G. C. Wilkins		Baltimore, Md.
Elmira & Canandaigua Div	R. Neilson		Elmira, N. Y.
Susquehanna Division	W. A. Baldwin		Williamsport, Pa.
Northern (New Hampshire)	George F. Todd		Concord, N. H.
Northeastern (Georgia)	Lyman Wells		Athens, Ga.
Northeastern (South Carolina)	J. F. Devine		Charleston, S. C.
North Pacific Coast	*John W. Doherty	W. F. Russell	San Francisco, Cal.
Northwestern Ohio	J. S. Morris		Toledo, O.
Northern & Northwestern	Jas. Webster		Toronto, Can.

O

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Ogdensburg & Lake Champlain	W. W. Hungerford		Ogdensburg, N. Y.
Ohio Central	*G. G. Hadley		Columbus, O.
Ohio & Mississippi	W. W. Peabody		Cincinnati, O.
Ohio & Mississippi		G. E. Atwood	St. Louis, Mo.
Eastern Division	C. B. Cole		Seymour, Ind.
Western Division	C. M. Stanton		St. Louis, Mo.
Louisville Division	C. Cole		Louisville, Ky.
Old Colony	J. R. Kendrick	F. P. Moseley	Boston, Mass.
Northern Division	§S. A. Webber		Fitchburg, Mass.
Cape Cod Division	§C. H. Nye		Hyannis Mass.
Main Line Division	§J. H. French		Boston, Mass.
Olean, Bradford & Warren	J. W. Watson		Oleon, N. Y.
Omaha & Republican Valley	P. J. Nichols		Omaha, Neb.
Omaha & Northern Nebraska	J. E. House		Omaha, Neb.
Oregon & California	J Brandt, Jr	J. Brandt, Jr	Portland, Oregon.
Oregon Railway & Navigation Co.	G. J. Ainsworth		Portland, Oregon.
Owensboro & Nasaville	E. Culverhouse		Owensboro, Ky.

P

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Paducah & Elizabethtown	Robert Meek		Elizabethtown, Ky.
Painesville & Youngstown	**J. A. Newcome		Youngstown, O.
Parker & Karns City	W. C. Moberly		Parker City, Pa.
Peach Bottom	S. M. Manifold		York, Pa.
Paw Paw & Toledo & South Haven	John Ihing		Lawton, Mich.
Pennsylvania	*Frank Thomson	Enoch Lewis	Philadelphia, Pa.
Pennsylvania	Charles E. Pugh		Altoona, Pa.
Pennsylvania	**John Reilly		Altoona, Pa.
New York Division	James McCrea		Jersey City, N. J.
Amboy Division	I. S. Buckelew		Camden, N. J.
Belvidere Division	J. A. Anderson		Lambertville, N. J.
New Jersey Division	F. Wolcott Jackson		Jersey City, N. J.
Philadelphia Division	W. F. Lockard		Philadelphia, Pa.
Middle Division	S. M. Prevost		Harrisburg, Pa
Pittsburg Division	Robert Pitcairn		Pittsburg, Pa.
Tyrone Division	S. S. Blair		Tyrone, Pa.
Bedford Division	Tho. A. Roberts		Harrisburg, Pa.
West Pennsylvania Division	E. B. Taylor		Allegheny City, Pa.
Lewistown Division	J. B. Hutchinson		Lewistown, Pa.
Pensacola & Selma	W. D. Chipley		Pensacola, Fla.
Peoria, Decatur & Evansville	G. R. Cobleigh	G. R. Cobleigh	Pekin, Ill.
Peoria & Jacksonville	*Geo. Skinner	Geo. Skinner	Peoria, Ill.
Peoria & Springfield	J. R. Hilliard		Peoria, Ill.
Petersburg	R. Sully	L. E. Clark	Petersburg, Va.
Philadelphia & Atlantic City	Ellis Clark	Ellis Clark	Philadelphia, Pa.
Philadelphia & Reading	*J. E. Wootten	W. S. Wilson	Philadelphia, Pa.
Catawissa & Williamsport Br.	D. C. Reinhart		Williamsport, Pa.
Reading & Columbia	Alex. M. Wilson		Columbia, Pa.
Lebanon & Tremont	H. W. Tracy		Pine Grove, Pa.
N. Penn. & B. Brook Divis'n.	E. A. Sweigard		Philadelphia, Pa.
Philadelphia & Baltimore Central	Henry Wood	Henry Wood	Philadelphia, Pa.
Philadelphia & Erie	Wm. A. Baldwin		Williamsport, Pa.
Philadelphia & Erie		Enoch Lewis	Philadelphia, Pa.
Western Division	J. W. Reynolds		Erie, Pa.
Middle Division	E. B. Westfall		Renovo, Pa.
Eastern Division	Thomas Gucker		Williamsport, Pa.
Danv., Haz. & W. Barre Div	Joseph Crawford		Sunbury, Pa.
Philadelphia, Wilmington & Balt.	H. F. Kenney		Philadelphia, Pa.
Philadelphia, Newt'n & New York	L. L. Bush		Philadelphia, Pa.
Piedmont Air-Line	T. M. R. Talcott	R. H. Duesberry	Richmond, Va.
Richmond & Danville Div	W. A. Green		Richmond, Va.
North Carolina Division	A. B. Andrews		Raleigh, N. C.
Pine River Valley & Stevens Pt	N. L. James		Richl'nd Cent., Wis.
Pittsburg & Castle Shannon	A. C. Hays		Pittsburg, Pa.
Pittsburg & Lake Erie	R. W. Jones		Pittsburg, Pa.
Pittsburg, Cincinnati & St. Louis	S. M. Felton, Jr	William Mullins	Pittsburg, Pa.
Pit'sburg, Cincinnati & St. Louis	*D. W. Caldwell		Columbus, O.
Pitts., Cin. & St. Louis Div	J. H. Barrett		Pittsburg, Pa.
Col., Cin. & Ind., Cent. Div.	J. Hill		Logansport, Ind.
Col., Cin. & Ind., Cent. Div.	J. F. Miller		Richmond, Ind.
Indianap. & Vincennes Div	E. W. McKenna		Indianapolis, Ind.
Cincin. & Musk. Valley Div.	C. C. Waite		Zanesville, O.
Little Miami Div	J. D. Ellison		Cincinnati, O.
Pittsburg, Ft. Wayne & Chicago	*J. D. Layng	William Mullins	Pittsburg, Pa.
Pittsburg, Ft. Wayne & Chicago	‡C. E. Gorham		Chicago, Ill.
Eastern Division	George S. Griscom		Pittsburg, Pa.
Western Division	C. D. Gorham		Fort Wayne, Ind.
Pittsburg & Western	J. A. Banner		Harmony, Pa.
Pittsburg, Titusville & Buffalo	Tho. H. Wilson		Oil City, Pa.
Pittsburg, Titusville & Buffalo		John L. Awl	Pittsburg, Pa.
Pittsburg, Virginia & Charleston	J. M. Byers		Pittsburg, Pa.
Port Dover & Lake Huron	A. B. Atwater		Woodstock, Ont.
Port Royal & Augusta	R. G. Fleming		Port Royal, S. C.
Portland & Ogdensburg	Jonas Hamilton	Jonas Hamilton	Portland, Me.
Portland & Rochester	G. P. Wescott, *Rec*		Portland, Me.
Potomac, Fredericksb'h & Pied't	Charles Kennedy		Fredericksb'h, Va.
Poughkeepsie, Hartford & Boston	J. A. Perkins	A. W. Cable	Poughkeepsie, N. Y.
Prince Edward Island	L. B. Archibald	L. B. Archibald	Charlottet'n, P. E. I.
Prospect Park & Coney Island	R. Schermerhorn		Coney Island, N. Y.
Providence & Springfield	William Tinkham	William Tinkham	Providence, R. I.
Providence & Worcester	W. E. Chamberlain		Providence, R. I.
Providence, Warren & Bristol	Waterman Stone		Providence, R. I.

Q

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Quebec, Mont., Ott'a & Occidental	L. A. Senecal	W. E. Blumhart	Montreal, Can.
Quebec Central	§A. Steele		Sherbrooke, Can.
Queen Anne & Kent County	P. H. Irwin		Centreville, Md.
Quincy, Missouri & Pacific	F. D. Schermerhorn		Quincy, Ill.

R

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Raleigh & Augusta Air-Line	J. C. Winder		Raleigh, N. C.
Raleigh & Gaston	J. C. Winder		Raleigh, N. C.
Rhinebeck & Connecticut	J. H. Jones		Rondout, N. Y.
Richmond, York Riv. & Chesap'ke	H. T. Douglas	B. S. Crouch	Richmond, Va.
Richmond & Allegheny	*Decatur Axtell		Richmond, Va.
Richmond & Danville	(See Piedmont Air-Line).		
Richmond, Frederick'h & Potomac	E. T. D. Myers	T. L. Courtney	Richmond, Va.
Richmond & Petersburg	Theo. D. Kline		Richmond, Va.
Rio Grande	*M. J. Gomila		Brownsville, Tex.
Rochester & State Line	J. E. Childs	J. E. Childs	Rochester, N. Y.
Rockwood & Tennessee River	H. Clay Evans		Rockwood, Tenn.
Rock Island & Mercer County	*R. R. Cable		Rock Island, Ill.
Rock Island & Peoria	R. R. Cable	R. R. Cable	Rock Island, Ill.
Rome	Eben Hillyer		Rome, Ga.
Rome, Watertown & Ogdensburg	E. A. Van Horne		Watertown, N. Y.
Rome, Watertown & Ogdensburg		G. W. B. Cushing	New York City.
Rumford & Buckfield	O. Hayford		Canton, Me.

S

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Scioto Valley	Joseph Robinson		Columbus, O.
St. Croix & Penobscot	Wallace Haycock		Milltown, Me.
St. Lawrence & Ottawa	†Tho. Reynolds	Tho. Reynolds	Ottawa, Can.
St. Johns	R. McLaughlin		Jacksonville, Fla.
St. Johns & Indian River	W. H. Churchill		Titusville, Fla.
St. John & Maine	H. D. McLeod		St. John, N. B.
St. Johnsbury & Lake Champlain	A. B. Jewett		St. Johnsbury, Vt.
St. Joseph & Des Moines	J. F. Barnard		St. Joseph, Mo.
St. Joseph & Western	L. D. Tuthill		St. Joseph, Mo.
St. Joseph & Western		A. D. Clarke	Omaha, Neb.
St. Louis, Alton & Terre Haute	Beriah Warren	Beriah Warren	St. Louis, Mo.
St. Louis, Hannibal & Keokuk	W. W. Walker		Hannibal, Mo.
St. Louis, Iron Mountain & South	Arthur W. Soper	W. S. Cuddy	St. Louis, Mo.
Texas Division	J. W. Brown		Texarkana, Texas
Missouri Division	Wm. Kerrigan		St. Louis, Mo.
St. Louis & San Francisco	*C. W. Rogers	C. W. Rogers	St. Louis, Mo.
Kansas Division	W. A. Thoms		Oswego, Kan.
St. Louis, Keokuk & Northwest'n	A. L. Griffin	John A. Blood	Keokuk, Ia.
St. Louis, Salem & Little Rock	E. B. Sankey		Salem, Mo.
St. Louis, Salem & Little Rock		H. A. Crawford	St. Louis, Mo.
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St. Paul, Minneapolis & Manitoba	*Jas. J. Hill	J. C. Morrison	St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	E. B. Wakeman		St. Paul, Minn.
St. Paul & Sioux City	E. W. Winter		St. Paul, Minn.
St. Paul, Stillwater & Taylor's Falls			St. Paul, Minn.
Sacramento & Placerville	Josiah Johnson		Sacramento, Cal.
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San Francisco & North Pacific	H. C. Whiting	P. E. Dougherty	Petaluma, Cal.
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Savannah & Memphis	*G. J. Foreacre		Atlanta, Ga.
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Selma, Rome & Dalton	*J. F. O'Brien		Selma, Ala.
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Shenango & Allegheny	J. T. Blair		Greenville, Pa.
Shepaug	C. H. Platt		Litchfield, Conn.
Sioux City & Pacific	F. C. Hills		Missouri Valley, Ia.
Sioux City & Pacific	*P. E. Hall	P. E. Hall	Cedar Rapids, Ia.
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South Carolina	John P. Peck	S. B. Pickens	Charleston, S. C.
Southeastern of Canada	H. A. Alden		Newport, Vt.
Southern Central	Jas. G. Knapp		Auburn, N. Y.
South Mountain	W. H. Woodward		Pine Grove Furnace, Pa.
Southern Pacific	A. C. Bassett	John R. Watson	San Francisco, Cal.
Los Angeles & Yuma Div	§E. E. Hewitt		Los Angeles, Cal.
Tulare Division			Oakland, Cal.
South Pacific Coast	F. W. Bowen		San Francisco, Cal.
Southwestern of Georgia	W. G. Raoul		Macon, Ga.
Southwestern of Kentucky	M. Tabler		Harrodsburg, Ky.
Spartanburg, Union & Columbia	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
Spartanburg & Asheville	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
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Springfield & Northwestern	E. B. Hyde	E. B. Hyde	Springfield, Ill.
Springfield Southern	Wm. Thornburg	G. A. Barnes	Springfield, O.
Springhill & Parsboro	J. A. Killam		Parsboro, N. S.
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Terre Haute & Ind'apolis Line.		C. R. Peddle	Terre Haute, Ind.
Logansport Division			Logansport, Ind.
Terre Haute & Southeastern	George Atherton		Terre Haute, Ind.
Texas & New Orleans	C. A. Burton	P. B. Watson	Houston, Tex.
Texas & Pacific	Geo Noble	Geo. Noble	Marshall, Tex.
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Southern Division	C. Harris		Marshall, Tex.
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Texas & St. Louis	C. F. Stephens		Tyler, Tex.
Tioga & Elmira State Line	L. H. Shattuck		Elmira, N. Y.
Toledo, Delphos & Burlington	I. H. Burgoon	H. Z. Eaton	Delphos, O.
Dayton Division	J. O. Arnold		Dayton, Ohio.
Toledo & Ann Arbor	J. S. Morris		Ann Arbor, Mich.
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U			
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Mountain Division	Robert Law		Cheyenne, Wy. T.
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V			
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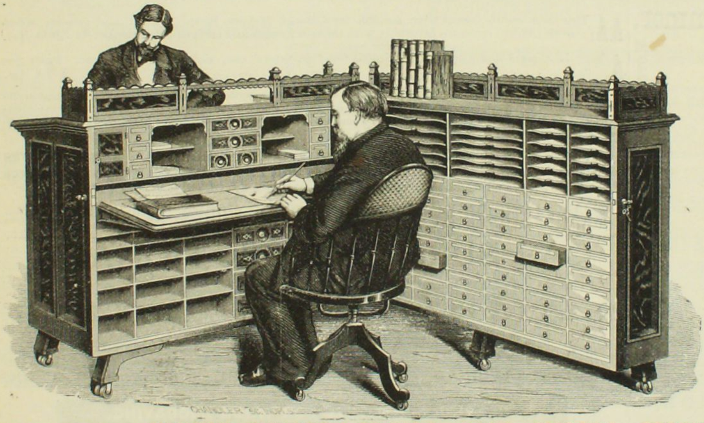

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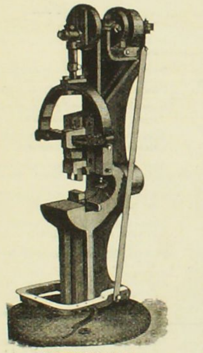

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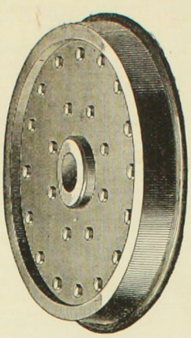

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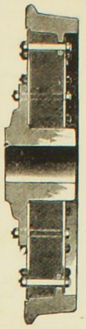

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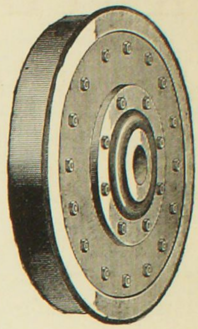

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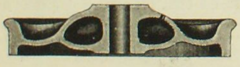

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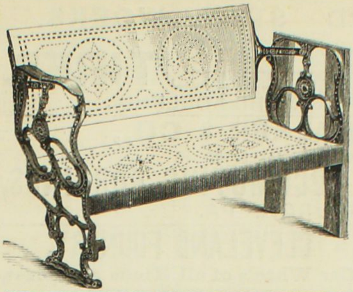

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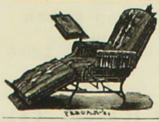

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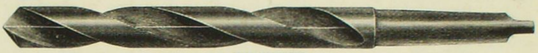

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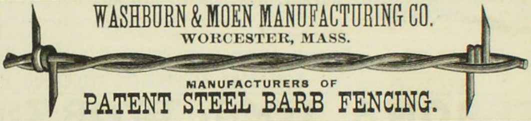

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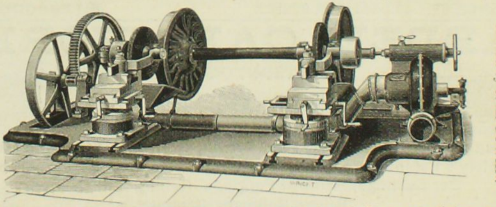

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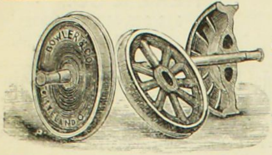
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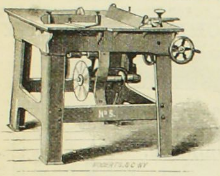

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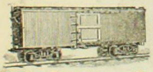

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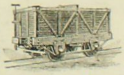

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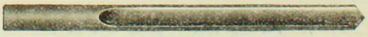

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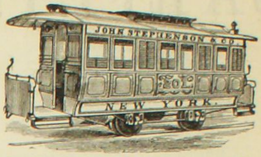

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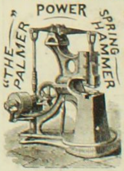

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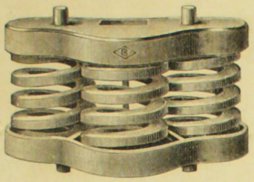

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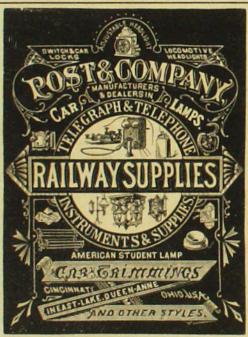

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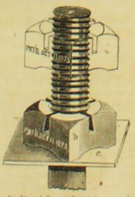

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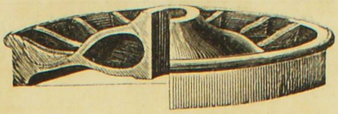

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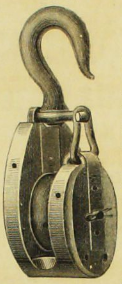

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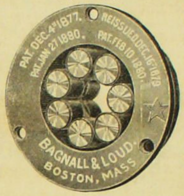
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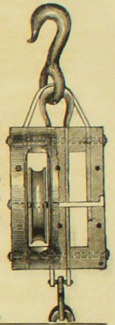

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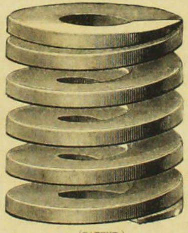

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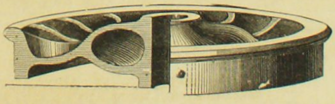

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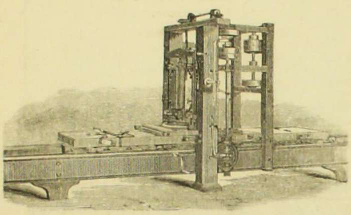

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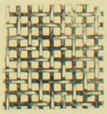

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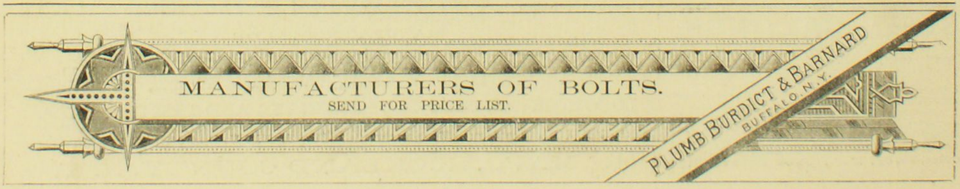

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